

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

Layer 3 switches push routers to the edge. **PAGE 32.**
New roles for routers

INVASION of the EMBEDDED SYSTEMS

FEATURE

By Kimberly Patch and Eric Smalley

You may think you'll be able to catch your breath in a couple of years. After all, you're beginning to get a handle on remote access and electronic commerce, and the Year 2000 problem has a built-in deadline. But lurking on the horizon is a new challenge that will keep you hopping long after the new millennium arrives, potentially adding whole new classes of devices to your network.

The first phase of this insidious plot is almost complete; nearly everything that uses electricity, from light fixtures to copy machines to air conditioners, now incorporates semiconductors. And Phase 2 is under way as increasingly these devices are being connected to corporate networks and the Internet. The invasion of the embedded systems is at hand.

Continued on page 53



Problems plague SET project

By Ellen Messmer

Visa International, Inc., MasterCard International, Inc. and the banking community have high hopes that the Secure Electronic Transaction (SET)

payment protocol will be widely used to approve credit-card transactions on the 'Net. But performance problems in SET equipment leave the future of the

See SET, page 79

Wintel avoids government ire

MICROSOFT BRINGS ...



CINDY CHARLES

- Fatter software to drive demand for faster Intel chips
- Near total dominance of PC operating systems market

The Department of Justice calls Microsoft Corp. a monopoly that abuses its power. The Federal Trade Commission (FTC), it appears, is about to brand Intel Corp. with the same tag. But neither government agency has uttered a peep about the combination of the two companies' technologies, commonly known as Wintel.

Microsoft and Intel often seem to act as the same company, two monopolies that together dictate PC and thin-client designs, and are starting to put the Wintel stamp on network technology and standards. But so far, neither the Justice Department nor the FTC has taken a good hard look at the Wintel duopoly, insiders say. Maybe it's because they can't.

See Intel, page 14

Also inside:

- FTC preps Intel suit. Page 16.
- How do the FTC and DOJ differ? Page 14.

INTEL BRINGS ...



WALTER CALAHAN

- Faster chips to drive demand for Microsoft's fatter software
- Near total dominance of PC chip market

Sprint's big net gamble

By David Rohde

New York

Sprint Corp. last week threw its hat into the convergence ring, announcing a new network architecture that aggregates voice and data traffic into ATM cells at the customer premise and ships it end-to-end over broadband facilities.

The new platform is called the Integrated On-Demand Network, or ION. The platform will potentially support any type of voice, data or video stream from users and ship it over leased digital subscriber lines or dedicated fiber access lines to Sprint ATM service nodes.

Largely complete in the backbone but still a work in progress at the edge, ION resembles several new, heavily publicized carrier networks, but with one big difference: It's all ATM from the customer premises out, rather

than presenting a native IP face to the wide area.

Sprint Chairman and CEO William Esrey gave ION a big send-off at a Broadway theater. In a presentation that was notably

light on technical details, Esrey claimed ION will allow customers to save up to 70% on the price of a phone call and provide a speed up to 100 times faster than that

See Sprint, page 80

Sun's handling of Java criticized

By Chris Nerney

When it comes to Java, Sun Microsystems, Inc. is in a bit of a pickle.

The company needs to make money off the programming language, and at the same time promote Java as an open industry standard.

Sun has not always done a perfect job balancing these sometimes contradictory goals, developers say, pointing to these shortcomings:

- Failure to convey a coherent Java vision, which has confused the market, slowed software

See Sun, page 12

MORE ONLINE

- A look at last year's flap over making Java an international standard
- Sun's explanation of its "open development process" for Java
- Overviews of common Java myths

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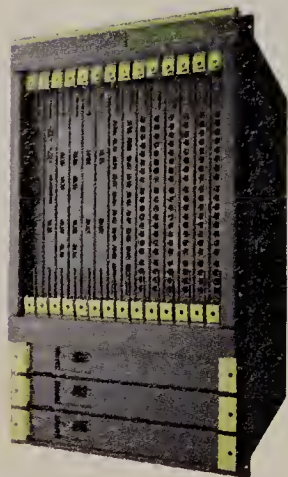
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HACKER SMACKER

Santa Clara County Network Manager Dean Leinebarger is fighting to keep infiltrators off his backbone. Page 41

JASON GROW

THAT SILKY FEELING

Start-up Silknet Software snagged \$16 million in venture capital last week. 'Net Buzz looks at that and other big 'Net news. Page 82.



UNION UPRISING

Don't believe everything you hear coming from MCI/WorldCom merger advocates, says Morton Bahr, president of the Communications Workers of America. Page 36.



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Everything from the copier to the Coke machine may soon be attached to your network, adding to your administrative burden but bringing cost-cutting opportunities. Page 1.

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COOL TOOLS: *Corex's CardScan will help you get rid of business card clutter. Page 60.*



TERRY COLON

NetworkWorld Fusion

This Week

Only on Fusion

Your workweek. Are you overworked? A Fusion reader had this to say: "I finally figured out I was working too much when I found out I was expected to carry a pager to my grandfather's funeral three states away." Read our article about overworked IT professionals and comments from other Fusion users, then add your thoughts. **DocFinder: 7442**



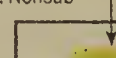
Keeping Current. Fred McClimans discusses the impact of last week's Tellabs/Ciena and Alcatel/DSC deals. **DocFinder: 7445**

Firewalls: Last week's firewall review and Buyer's Guide sparked a number of questions from readers. We've set up a forum to post firewall questions and discuss firewall issues, so jump right in. And we'd like to hear your firewall experiences — and what you'd recommend to colleagues. **DocFinder: 7443**

The industry. Looking for some background on a particular vendor? Our Industry/Stocks page has links to information on key vendors, including latest stock and financial news. **DocFinder: 7444**

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News briefs, June 8, 1998

Shots fired over FCC bow

■ Fax machines in Washington, D.C. were smoking last week as politicians issued statements arguing over who's to blame for requiring carriers to fund a government-mandated Internet access subsidy for schools. After Federal Communications Commission Chairman William Kennard criticized AT&T for passing along its subsidy fees to users, FCC Commissioner Harold Furchtgott-Roth issued a statement praising AT&T for revealing the "hidden tax" to consumers. The next day, Senate Judiciary Committee Chairman John McCain (R-Ariz.) wrote Kennard complaining that carriers "are continuing to be pressured in to trying to conceal from consumers the added costs of funding subsidy programs established by the FCC." Kennard shot back with a statement claiming it was Congress that directed the FCC to establish a school subsidy in the first place.



Furchtgott-Roth and McCain speak out on hidden costs.

The busy boys at Bay

■ Bay Networks, Inc. is actively seeking partnerships with hardware vendors that supply equipment to telecommunications carriers, said Bay CEO David House last week. "One of the things we are actively pursuing is closer partnerships with telco equipment providers because of their relationship with the service provider infrastructure customers," he said. House would not comment on recent widespread rumors that his company is an acquisition target for such a vendor. In recent weeks, rumors have circulated that Nortel and Alcatel might acquire Bay. Also last week, Bay acquired wireless LAN developer Netwave Technologies, Inc. for \$10 million. Netwave's AirSurfer wireless LAN adapters and access points support speeds up to 2M bit/sec. Bay will add the products to its BayStack line of workgroup LAN devices.

Privacy practices lambasted

■ Those who worry about their privacy while online last week had their worst fears confirmed. The Federal Trade Commission (FTC) released a report that found most commercial Internet sites have failed to adopt practices that inform visitors how personal information about them will be used.

Until these privacy issues are addressed, Internet commerce will not reach its full potential as a mass market business, FTC Chairman Robert Pitofsky said in a written statement accompanying the report. The FTC is now recommending that the U.S. Congress develop legislation requiring parental notification and consent when World Wide Web sites collect personal information from children. About 85% of commercial sites reviewed collect personal information, but only 14% notify consumers of the site's personal information practices. Just 2% provide consumers with a comprehensive privacy policy.

Domain name waffling

■ A long-awaited government domain name plan came out last week — with the government saying it will leave critical questions about Internet addresses to an as-yet-unformed nonprofit corporation. However, that decision means no action will be taken any time soon on a proposal to add seven new generic top-level domains, such as .firm, .rec and .arts, officials said.

The government white paper was vague on how the board of this corporation would be chosen. "The board of directors for the new corporation should be balanced to equitably represent the interests of IP number registries, domain name registries, domain name registrars, the technical community, ISPs and Internet users [commercial, not-for-profit and individuals] from around the world," officials said. However, the paper did state that the corporation would be U.S.-based and that it would not fall under the auspices of the International Telecommunication Union.

HP service mgmt. wares on tap

New and future products designed to stake leadership in nascent market.

By Jim Duffy
Seattle

In an aggressive bid to stake a leadership claim in the budding service management market, Hewlett-Packard Co. last week unleashed a bevy of network and systems management products designed to give users better control of IT resources.

HP also discussed future plans for two OpenView products integral to its service management portfolio — IT/Operations (IT/O), for measuring system availability, and IT/Administration (IT/A), for change and configuration management.

In all, HP rolled out five new products that should help users define, implement and enforce service management guarantees in client/server and Internet environments. HP also enhanced several applications and announced new sales and marketing relationships.

The new products and product plans hit home with managers who need to show what IT contributes to their company's bottom line.

"Service management is important to all of us no matter

• Version 3.5 of HP AssetView for the World Wide Web, which inventories IT assets, such as computer and software purchases and deployments, in a Microsoft Corp. SQL Server database. The package will cost \$7,995 for Windows NT and \$8,995 for Unix. It will be available July 1.

• Version 5.5 of IT Service Manager, which establishes priority among its seven applications for help desk, problem, change and software distribution management. Service Manager 5.5 will ship in late summer and cost \$25,000 per module.

• Network Node Manager 6.0 and NetMetrix 6.0, which feature event correlation, data warehousing and Cisco Systems, Inc. virtual LAN performance management (NW, June 1, page 13). These products will be available in the fall starting at \$4,995.

HP also announced that before year-end it will ship the Desktop Management Task Force's (DMTF) Common Information Model in its ManageX Windows NT management software. The product will be added to other OpenView applications next

with four new service management software modules. One of those is the Service Navigation module, which HP said correlates performance data and service availability.

The Service Navigation interface is based on a new Java graphical user interface for IT/O. Service Navigation displays the relationship between managed elements and the IT service they are responsible for delivering. It also lets users immediately assess the business impact of systems and network failures and quickly pinpoint the root cause of those failures.

Reports created with Service Navigation will show problem resolution time, application and node availability, and performance trend information. Service Navigation's help desk feature will enable users to display IT/O data in a help desk application and reflect help desk trouble ticket changes in IT/O.

Integration plans

Integrated products are fine and dandy, but Capital One Services, Inc. is more interested in creating workflow around five management tasks: service-level, help desk, problem, change and configuration management.

"The key is not the tool; the key is the process," said Martin Erb, IT operations manager at the Glen Allen, Va., credit card service company.

For IT/A, HP plans to foster tighter integration between the package and its Desktop Administrator software distribution product; provide NT and Oracle user management; and support additional inventory data for Solaris and AIX platforms.

Integration with Desktop Administrator will let users distribute software to NT and Unix systems from a single IT/A console. NT and Oracle user management capabilities will allow IT/A users to discover, add, modify and delete groups of users, and assign them roles in specific domains.

A version of IT/A with Desktop Administrator integration will emerge in early 1999, HP said. NT and Oracle user management will be added later this year. An enhanced agent for AIX 4.2 is available now, and an agent for Solaris 2.6 will come later this year. ■

HP OPENVIEW ENHANCEMENTS ON TAP

► Four new service management features for IT/O:

- Navigation support
- Desk links
- Out-of-box reporting
- Task support for scheduling and auditing

► Common Agents for IT/O and ManageX Windows NT management suite

► A Java graphical user interface

► Management modules for Baan applications

► Integration of IT/A and Desktop Administrator applications

► NT and Oracle user management capabilities in IT/A

► Additional inventory management support for Solaris and AIX platforms

what stage of enterprise management we're in," said Sandra Potter, president of the OpenView Forum International user group and an IT manager at Air Products and Chemicals, Inc. in Allentown, Pa.

The new products include the following:

• Version 2.0 of the Application Response Monitor API in GlancePlus applications and Measureware agents. The new version will help users track application requests and responses. It will be available this summer.

year. The DMTF technology will define a way for management applications to share information via a Web browser.

Additionally, HP said Netscape Communications Corp.'s messaging software will be certified as "OpenView Ready," and Intel Corp. is integrating its LANDesk, Server Control and DeviceView client and server management tools with OpenView.

HP also provided a glimpse into the future of IT/O and IT/A. Over the next 12 to 18 months, HP will fill out IT/O

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Quip-filled debate pits ATM advocates against detractors

By John Gallant
San Jose, Calif.

In the end, the high-profile debate over whether the "ATM Forum ruined ATM" generated more heat than light and did little to sway the admittedly biased audience at the ATM Year 98 conference here.

But the quip-fest, which pitted two opponents and two proponents of ATM and the ATM Forum, was notable for the stinging quality of the barbs exchanged by the participants.

The spiking got off to an early start when Tom Lyon, founder of Ipsilon Networks, Inc. and now an executive with Nokia Corp., which purchased the IP switching company, said ATM was the product of "drug-induced decisions." Among those hallucinatory choices, according to Lyon, was the decision to standardize on a 48-byte cell payload, which he labeled "a bad compromise made early on."

In addition to slamming the

technology itself, Lyon lambasted the ATM Forum, saying the group had failed to define what problems ATM was trying to solve for customers and, thus, what ATM should ultimately become. "Is it a switching technology? A Layer 2 protocol? A quality-of-service mechanism?" he asked.

That "fundamental failure," Lyon said, led the Forum to tackle too many challenges and allow ATM to become too complex.

"All the industries came together around ATM and said 'Look how cool the future will be.' Tune in, turn on, switch cells," Lyon said. "But we all know there are horrible consequences with drugs. We got a whole new revolutionary network architecture when all we needed was a way to evolve our infrastructures. You see, a funny thing happened on the way to the Forum. There was something for everyone in those

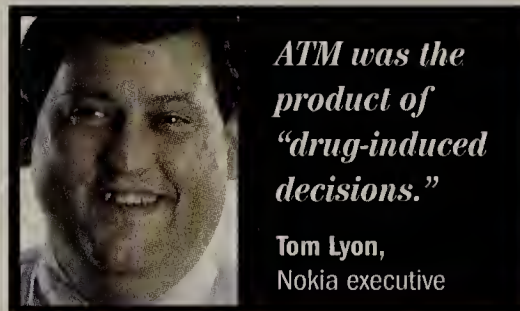
standards and early implementation agreements."

As if references he made to the Woodstock era and a Zero Mostel-era Broadway weren't enough, Lyon concluded that the ATM Forum had created a camel with 10,000 humps, and he brought his overall message home with an ever more vivid analogy. "The ATM Forum is like a teenage girl who can't say no. Pretty soon there are lots of undesirable guys hanging around and then nine months later you wind up with a product that no one wants to support."

Those undesirable types were the nontechnical marketing and business executives who Lyon says swamped the ATM Forum seeking approval for all sorts of nonessential ATM add-ons. "The engineers checked out and trouble checked in," chimed Lyon.

Robert Sansom, vice presi-

dent, architecture and one of FORE Systems, Inc.'s founders, admitted the Forum could have done some things better, such as involving component vendors in



DAVID POWERS

"from Pittsburgh and we don't do drugs there," and he mock-mistakenly referred to Ipsilon, Lyon's former company, as "Exsilon" — an apparent reference to Ipsilon's failure to live up to the early hype about IP switching. He also jabbed at the Ethernet community's holier-than-thou attitude on standards making, citing the failure or slow development of key specifications, such as the Multi-protocol Label Switching (MPLS) standard.

Sansom had help from George Dobrowski, president of the ATM Forum, who said ATM is not ruined at all, estimating the ATM market to be \$5 billion per year. "ATM is surviving and thriving. It is fast, reliable, standard and scalable. It is IP-, SNA-, voice- and video-friendly. It supports nonstop nets that don't have to be upgraded every two years."

How did that come to pass? Not surprisingly, Dobrowski gives credit to the Forum, while admitting the organization could have handled itself better in some areas, such as combating the über-hype about ATM-as-panacea that has come back to haunt the technology. He blasted right back at the IP camp, saying standards-makers there are also threatening to add too much complexity.

"There is a mushroom cloud of specs," Dobrowski said. "All of these specs will tax processing power. How will we support all of them and how will all these RFCs and specs interact?"

Dobrowski answered Lyon's query as to just what ATM is, saying ATM is a "transmission and switching protocol" and the perfect vehicle for IP traffic.

But Lyon wasn't alone in criticizing ATM and the ATM Forum. Gordon Stitt, president of Gigabit Ethernet vendor Extreme Networks, Inc., said the ATM camp failed to foresee the dominance of IP and the impact of Moore's Law, a reference to the fact that many routing functions can now be handled cheaply and powerfully in hardware.

More important, Stitt said ATM was designed to serve two masters — LAN and WAN users, but that it can't. "It is a principal tenet of networking that LANs and WANs are fundamentally different. ATM has struggled to meet the needs of these two diverse markets." ■

its discussions earlier on and handling the debate over traffic management specifications better. But he said the Forum had done a "pretty good job" developing key ATM specifications such as Local Area Network Emulation (LANE) and Multi-protocol over ATM (MPOA), which are helping customers build stable, scalable networks.

Sansom added that FORE is

Lotus set to ship SmartSuite Millennium

Upgrades feature new Web authoring application, tighter ties to Word.

By Paul McNamara
Cambridge, Mass.

Lotus Development Corp. next week will begin shipping SmartSuite Millennium Edition, which features new Internet capabilities and tighter ties to PC productivity leader Microsoft Office.

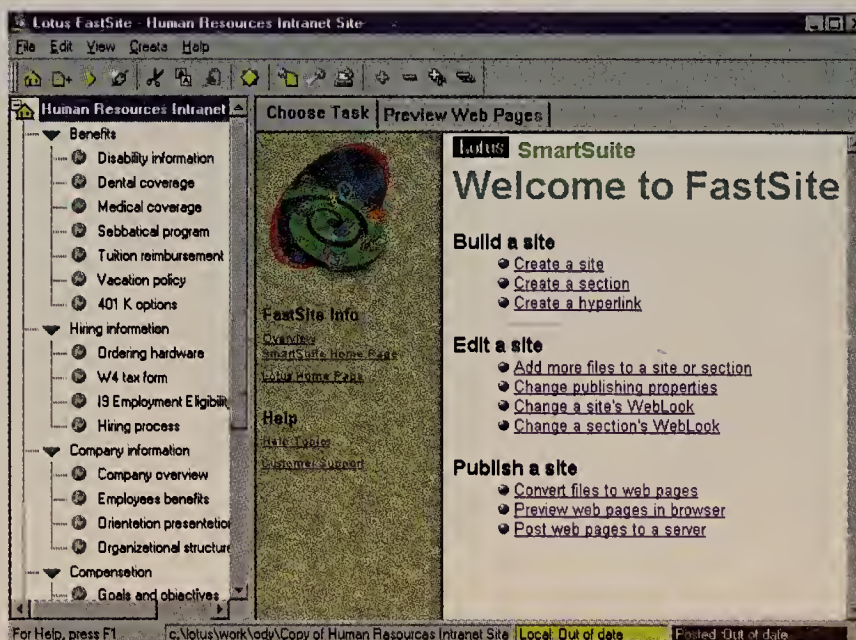
SmartSuite plays a faint second fiddle to Office in terms of unit sales and revenue, but Millennium Edition beta testers and industry analysts say Lotus' latest offering will please its installed base and continue to give others a viable alternative to Office.

Among Millennium Edition's new features are:

- FastSite Web Publisher, a new application that allows nontechnical corporate users to build and manage simple intranet sites without the help of Webmasters.

FastSite lets users publish files created in word processors, spreadsheets, databases and presentation graphics directly to an intranet or Internet site.

- Improved file format compatibility with Microsoft Office. For example, SmartSuite lets a user open a Microsoft Word file



SmartSuite Millennium Edition from Lotus will feature a new application called FastSite, which allows nontechnical users to build and maintain simple intranet sites.

in Lotus Word Pro, change the document, and resave it in its original Word format.

- Built-in speech recognition capabilities in Word Pro through integration with ViaVoice Gold from IBM, Lotus' parent company.

The latest version of the 1-2-3 spreadsheet is also voice-enabled.

Beta testers reacted positively to what they have seen.

"The suite is intensely easy to

use," said Jon Spencer, president of Albacur Circulation, Inc., a Toronto-based company that manages circulation for magazines.

SmartSuite offers users a "more intuitive" experience than Office, according to Spencer, who has used both products.

"I certainly have found my share of bugs" in SmartSuite Millennium Edition, Spencer added, although he character-

ized them as "mostly cosmetic issues" that he was confident Lotus would address before final release.

While a number of beta testers have had high praise for FastSite, Spencer remains unconvinced about the importance of such Internet features in desktop suites.

"I'm not as hot-to-trot on all of the Internet stuff that I think the industry is going for generally," Spencer said. "How often do I really want to publish my database onto the [World Wide] Web or a spreadsheet onto the Web?"

One industry analyst, Suzanne Snygg of Dataquest, Inc. in San Jose, Calif., said she believes that ongoing efforts by Lotus to smooth interoperability between SmartSuite and Office are likely to pay dividends.

"The best hope that Lotus has is hammering down the message that we can work very nicely in a multiplatform environment," Snygg said.

"The one thing Microsoft does a really poor job of is . . . compatibility with prior versions of software," she added.

SmartSuite Millennium Edition will be priced at \$399 for new retail customers and \$149 for upgrade customers. Volume discounts will be available. ■



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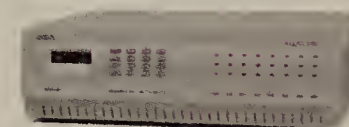
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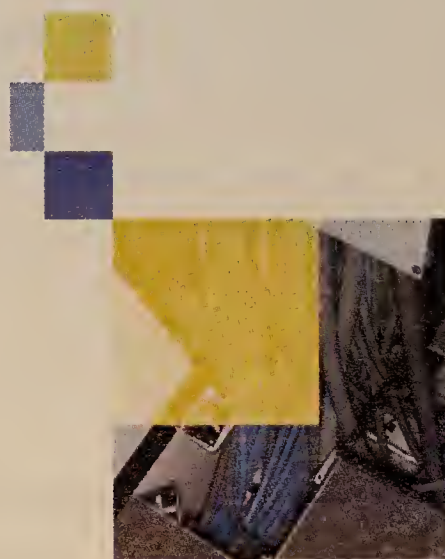


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Netscape strategy based on Netcenter, enterprise software

By James Niccolai
San Francisco

Netscape Communications Corp. last week outlined its strategy for targeting customers who want to do business on the Internet. The strategy will take advantage of the company's Netcenter Web site as well as its directory and application server software products.

Netscape will draw on the full range of its products and services to allow businesses to buy, build or outsource the products and services they need to do business on the World Wide Web, company executives said at a meeting with press and analysts.

"The enterprise service busi-

ness and the portal business are coming together to create a new, as yet undefined, opportunity to sell products and services," with businesses of all sizes rushing to stake out territory on the Web, said Jim Barksdale, Netscape president and CEO. "Our advantage is that we are in both of those businesses."

He said Netscape will only sell enterprise software directly to corporations with revenue of more than \$750,000 and will sell software to smaller businesses via third parties.

In addition, Netscape will offer electronic commerce services through Netcenter, which

Netscape over the past month has been jazzing up with features such as free e-mail and personalized content services. Businesses will be able to outsource electronic commerce activities through Netcenter, saving them from building their own sites, Barksdale said. To drive traffic to the site, Netscape will offer customizable features that can best be accessed using its Navigator browser.

Netscape also announced two beta additions to its CommerceXpert software line, as well as partnerships with Sun Microsystems, Inc. and Bay Networks, Inc. that Netscape said will simplify the administration of a

company's online activities.

Bay has licensed its Directory Server software, which will allow the company to build products that integrate directory features with the switches that direct traffic on LANs and WANs. Such features allow a company to control access to corporate networks based on the users, the applications and their bandwidth.

Bundling Netscape's software with Bay's switches will allow network administrators to make a change to a directory once and then have it automatically pushed out to all the switching devices around a network, rather than configuring each

switch separately, Netscape said.

Niccolai is a correspondent with IDG News Service's San Francisco Bureau.

Sun

Continued from page 1

development and created an opportunity for Microsoft Corp. to create a proprietary version of Java.

- Conflicting and incomplete signals about which markets Sun will enter.

- An emphasis on relationships with major vendors such as IBM, Netscape Communications Corp., Oracle Corp. and Novell Inc. at the expense of smaller partners.

- Delays in releasing key Java technology such as the JavaStation network computer and HotSpot compiler.

- The fact that Sun controls the Java standards process by acting as a publicly available submitter (PAS), or gatekeeper, to the International Standards Organization (ISO).

Sun has heard the criticisms and has taken major steps to ease the concerns of Java licensees. In fact, just this week, the company is expected to officially announce the creation of the Java Platform Group, which will be responsible for coordinating Java standards and reference implementation work.

The group will be part of Sun's Java software division but will work independently, according to George Paolini, director of marketing for the Java software unit.

"Our model has always been to agree on a platform and compete on its implementation," Paolini said. Creating the Java Platform Group merely reinforces that commitment

and provides a focal point where licensees can direct their suggestions for Java, he said.

The Java Platform Group is only the latest internal change announced by Sun. In April, the company announced a major reorganization designed in part to better coordinate its Java development and marketing efforts.

Sun dissolved its independent operating units into divisions within the company. Two of those units, JavaSoft and SunSoft, had been criticized for not working together, and backbiting between the two was common.

For some Java partners and independent developers, however, the changes have not allayed fears that Sun will put its own interests first at the expense of numerous, smaller Java licensees.

The standards issue, in particular, concerns smaller vendors. Sun is the first commercial company that has been allowed to directly submit standards proposals to the ISO. Further, in its PAS role, Sun can accept — or reject — submissions to improve the Java language.

Many companies, including Microsoft and Intel Corp., argue that Sun will use its PAS position to drive Java standards development to its own competitive advantage. "They want to be the referee, but they want to play in the game too," said one executive for a third-party middleware

vendor and Java licensee.

"I think many people wish [the standards process] was more open so that more people could help accelerate the matu-

SUN'S SPRING SHUFFLE

Sun Microsystems has taken several steps this spring to address the criticisms of disgruntled Java licensees and eliminate corporate infighting and disorganization. The steps include:

April — A promise to Java licensees that Sun won't produce software that will compete with their Java products.

April — Announcement of major reorganization in which separate operating units such as JavaSoft and SunSoft, which often sparred with each other, will be eliminated and incorporated into Sun as divisions.

June — Creation of the Java Platform Group, which will focus on the Java standards effort and will be "walled off" from product divisions.

riety of the product," said John Andrews, the new CEO of Sanga International, Inc., a Java applications vendor based in Barbados. "Unfortunately, Sun's not allowing that at this time."

Sun's Paolini said he understood why some licensees might question whether Sun will continue to separate its standards efforts from its Java product development. But, he said, "History speaks for itself. In the last two years we've developed 32 different Java interfaces, and we've never once made a decision that would favor Sun [in the market]."

Another sore spot for Java developers has been Sun's

working with larger vendors such as IBM and Netscape at the expense of smaller vendors.

"It's important that all participants feel like they have the ability to drive changes in Java," said Tim Sloane, an analyst with Aberdeen Group, Inc. in Boston. "What Sun will do for Java with [a company] like IBM is significantly different than what they'll do with a small company that is betting its life as much on Java as IBM [is] but doesn't represent the same financial gain."

Ignoring the contributions of smaller vendors comes at a risk, said Rick Ross, founder of the Java Lobby. "These companies [such as Sun] should know they can't go it alone," Ross said.

Still, some Java developers credit Sun with doing many things right. "Sun and IBM both are actually trying pretty hard to make a lot of development tools available to a lot of developers at nearly no cost," he said.

Andrews said unlike many Java vendors, Sanga isn't afraid that Sun will enter their market. "They do not want to develop domain applications in Java. So we feel very comfortable," Andrews said.

Sharam Sasson, president and CEO of Extensivity, Inc., a Web-based Java expense application vendor based in Emeryville, Calif., said Sun should continue to spearhead Java development and standards efforts. "At this stage it makes sense for Sun to control Java," he said. "Overall, I think Sun has been very responsive to our needs." ■

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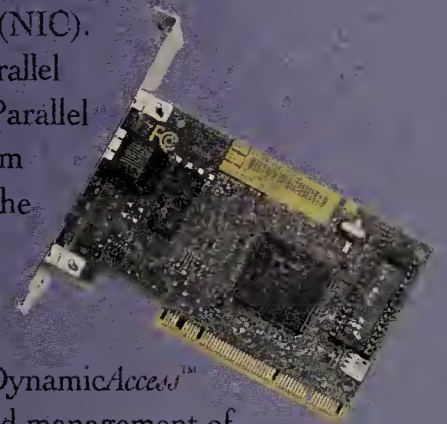
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Intel

Continued from page 1

"I'm not aware of any allegations that [Microsoft and Intel] are in cahoots," said Art Amolsch, publisher of the "FTC Watch" newsletter. And Richard Gray, an antitrust attorney in San Jose, Calif., said he knew of nothing like that coming from the FTC.

In fact, Wintel may be largely immune from government prosecution. Going against Wintel would require the proof of a conspiracy, Gray said. Even if there was proof of a conspiracy, it "would be difficult to go after Wintel conspirators. It is usually done when competitors in the same field work to change market allocation."

The government would only intervene if the Microsoft-Intel relationship was "symbiotic to the point of collusion," said Robert Collins, editor of *X86.org Intel Secrets*, an online magazine.

The FTC, however, does seem poised to take action against Intel for abusing its monopoly position (see story, page 16).

Whether or not the government ever takes action, it is clear that Wintel has amassed huge power to define the future of computers and networking. And the two companies have done so with extraordinary coordination — all without the benefit of a formal joint development agreement that could dictate how decisions are made and carried out.

Instead, common self-inter-

est has led Microsoft and Intel along a path of closer and closer cooperation, with a healthy increase in market share for both, observers said. Microsoft Chairman Bill Gates, quoted in *Fortune*, explained the relationship this way: "Given that we agree on goals, shouldn't we share in the development of things?"

In fact, together Microsoft and Intel now essentially tell PC makers how to build their next-generation systems, guidelines that always demand new technologies from each of the Wintel partners.

It is common for companies to work together, but the Wintel relationship is unusual for two reasons: how long it has lasted and its impact on the marketplace. Microsoft and Intel each produce technologies that create demand for the other's product. For instance, Microsoft produces operating systems and applications that grow larger and larger with each revision. The software, in general, requires the latest and greatest Intel processors, sparking demand for Intel gear. On the flip side, Intel often creates special chip features, such as multimedia, producing demand for Microsoft operating systems and applications that support multimedia hardware.

Although the companies do not have formally announced development agreements, they work closely together at every level. In fact, Gates and Intel Chairman Andy Grove have had a close, though at times rocky, working relationship for years. Before Grove stepped

DOJ and FTC: What's the difference?

The Department of Justice has taken on Microsoft Corp., but it is the Federal Trade Commission that appears poised to tackle Intel Corp. So what's the difference?

The FTC and the Justice Department's Antitrust Division both can investigate antitrust allegations, though they hardly ever investigate the same company at the same time.

There are slight differences between the way the two agencies go about the job. The Justice Department is a Cabinet agency and is responsible first and foremost to the president, though it endures scrupulous congressional oversight. And

unlike the FTC, it can bring criminal actions against parties — say, if two competing executives collude on a price-fixing scheme.

The FTC is an independent agency created by and directly responsible to Congress. Still, the president appoints the five members, though the Senate must confirm them. However, current events concerning Microsoft and Intel stand the differences between the two agencies on their heads. For example, it was pressure brought on the

Justice Department by Senate Judiciary Committee Chairman Orrin Hatch (R-Utah) that helped light a fire under Microsoft.

— David Rohde



FTC Chairman Robert Pitofsky and U.S. Attorney General Janet Reno

down as Intel's president and CEO, he and Gates would meet formally once a quarter, with agendas prepared in advance by lower level executives.

Much of the interaction between Intel and Microsoft also occurs on lower levels, and much of it is a bit informal. "There are hundreds of [Microsoft and Intel] engineers working together," one Microsoft product manager acknowledged, requesting anonymity. "Even if we hated each other, we'd have to work together. It's a very symbiotic relationship."

"We have worked with [Intel] in many different groups and products at many levels: engineers, group man-

agers, product marketing. We'd often work in conjunction on a new chip or a new operating system or a new standard, like plug and play," said Carl Stork, general manager of hardware strategy. "There's no one formula for it. One or the other company has an objective and sometimes it aligns with the other's objectives. Or one company will go in a direction, and the other will support it."

"Today we're more focused on improving the PC. As a result there is more visible time spent together [on this] compared to the 'back room' time," added Marshall Brumer, group manager of the Windows OS Division.

But does close cooperation equal collusion? Intel and Microsoft are careful to keep the two concepts separate.

"If anything, I've seen a 'push back' from both companies to make sure they're not in collusion or give the appearance of that," said a sales executive at one hardware manufacturer that's working closely with Intel and Microsoft. This executive's own company is doing its part: a companywide e-mail directive was issued recently, warning employees not to use the word "Wintel" in public discussions or in writing.

Intel insiders were reluctant to discuss the Microsoft relationship with *Network World*.

Critical Wintel moments

1971: Intel creates the microprocessor.

1986: Compaq beats IBM to market with a 386-based PC. IBM dominance dims, and Intel and Microsoft take over.

1979: Bill Gates and Paul Allen begin developing BASIC for the Intel 8086.



PHOTO COURTESY OF MICROSOFT AND GATES

1996: In reaction to Java and network computers, Intel and Microsoft announce the NetPC.

1996: The two companies announce an open platform that builds on industry standards to make video, voice and data communications over the Internet as commonplace as a simple telephone call.

1997: Intel and Microsoft together set hardware guidelines for Windows NT 5.0. The guidelines require the latest in Intel chip technology. Specifications for future Windows 98 PCs also use the latest Intel processors.

1997: Cisco joins up with Intel and Microsoft to craft a security specification for networks and desktop computers.

1997: Gates and Andy Grove give separate speeches at a World Economic Forum and address virtually the same topic — that Europeans were falling behind in technology.

1997: The two companies, along with Compaq, announce the VIA server clustering specification.

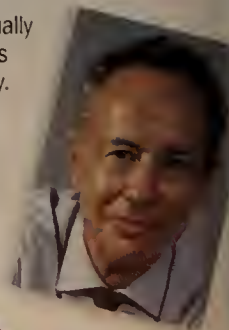
1996: Intel and Microsoft simultaneously release beta software — IP telephony and video conferencing respectively — designed to work together.

1998: Microsoft agrees to build Intel's InterCast software into Windows 98. InterCast distributes multimedia to PCs using empty space in a TV broadcast signal.



1998: The two companies agree to work on in-car computers.

1998: Microsoft and Intel announce a Unix migration program aimed at making Wintel devices dominant in the workstation market.



One Intel spokesman said "Are you crazy?" when asked to comment.

Network World also tried to interview a number of Microsoft engineers about the Intel relationship. None of them would say much.

One engineer who was involved in the initial work on Zero Administration Kit for Windows, a technology built in response to the network computer threat, explained that "we're strongly encouraged not to talk about that."

Some vendors that compete tooth and nail with Microsoft had nothing bad to say about the Wintel relationship. A spokesman for Sun Microsystems, Inc.'s Solaris unit said: "We in Solaris land have had nothing but a good and cooperative relationship with Intel." However, some competitors seemed gun-shy, in some cases appearing more nervous about discussing Intel than Microsoft.

So what's the harm?

The close Wintel working relationship has a range of effects. For example, companies that clone Intel chips may end up with products that are less compatible with Windows and have more difficulty optimizing new Windows features such as multimedia. In fact, several users interviewed by *Network World* complained of problems with cloned Intel chips.

Operating systems competitors, such as The Santa Cruz Operation, Inc. with Unix, Sun with Solaris, and IBM with OS/2, may not enjoy the same level of chip optimization as Microsoft. They certainly do not enjoy the same degree of marketing support. In fact, Intel's Grove publicly proclaimed that Intel was switching its desktops whole-hog to NT, citing a lower cost of ownership. There was no mention of other Intel-compatible operating systems.

Of course, NT is the system Microsoft has anointed as the new corporate standard, and it also happens to require a pretty ripping Intel chip to operate.

Relationship changing

But while the two powerhouses have nearly always worked together, the relationship has not always been good. "In some instances, the companies were not so much at loggerheads but just very wary of each other. Microsoft announced it was going to port NT to the MIPS [Reduced Instruction Set Computing] architecture, which totally pissed off Intel," said Adrian King, a former high-level Microsoft executive and now an author and software consultant.

King said the nature of the interaction has evolved. "Now the work is more 'uplevel' — on things like the PC specification [for Windows 98-compatible PCs] or the new power management standards," he said.

Asked if the conspiracy theorists were

correct in imagining joint Microsoft/Intel meetings as attempts to mastermind collusion, King laughed. "I've never been in any meeting where collusion could ever be construed. In the '80s, things were accelerating so fast, no one had time for conspiring," he said.

Users may have actually helped

pushed the two companies closer together. "I believe that a lot of this [cooperation] got started back in the '80s when there were those of us in corporate environments saying, 'You guys have got to start working together or we are never going to get this stuff working well,'" said Cheryl Currid, president of Currid &

Co., who was formerly an IS executive at The Coca-Cola Co.

John Cox, Doug Barney, Marc Songini, David Rohde, Chris Nerney and Christine Burns contributed to this report.

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Feds prep antitrust case against Intel

In a widening probe, the Federal Trade Commission is expected to sue the chip maker this week.

By Marc Songini
Washington, D.C.

Intel Corp.'s alleged monopolistic sins may be catching up with it this week if, as expected, the Federal Trade Commission sues the chip maker for antitrust violations.

Although the FTC isn't commenting, William Baer, director of the FTC Bureau of Competition, reportedly recommended bringing legal action against Intel for withholding vital information from competitors and customers.

Intel could be called on the carpet for its treatment of workstation maker Intergraph Corp. During a patent dispute between the two companies, Intel yanked precious information and product samples shared under a nondisclosure agreement (NDA) with Intergraph. Intel's action delayed the manufacture of several Intergraph products, including a server. Last November, Intergraph sued, claiming Intel unfairly ended the NDA relationship in order to gain

access to patented Intergraph technology.

The FTC is also investigating a similar, though now-defunct, lawsuit from Digital Equipment Corp. Intel competitors S3, Inc., Cyrix Corp. and Advanced Micro Devices, Inc. have also been subpoenaed by FTC investigators.

But Intel's worries may not end there. "I think the FTC is investigating a lot of different things," said Linley Gwennap, editor of the "Microprocessor Report," an industry newsletter. "The FTC is trying to establish a type of behavior using a monopoly in ways not fair to Intel's customers. They are looking at things like chipsets and graphics. It gets broader down the road."

Gwennap said the FTC is also investigating Intel's alleged threat to sue anyone making a special P6-bus chipset without an Intel license. "The company is angling to completely eradicate competition in the merchant chipset market," Gwennap said.

Intel declined to comment on the specifics of the FTC investigation but claimed it was in com-

pliance with the law. "We're continuing to cooperate with the FTC," an Intel spokesman said last week. "Our behavior and

being investigated by the FTC, including a 1994 court case into which Intel stepped on behalf of PC maker Packard Bell NEC, Inc. Compaq Computer Corp. was suing the Intel partner for patent violations.

According to the report, Compaq did not include Intel in the suit because the two compa-

FTC vs. Intel, the basic facts:

- The Federal Trade Commission may vote as early as this week to sue Intel for antitrust violations.
- The FTC's top prosecutor allegedly urged the commission to file charges against the chip giant for abusing its power as a monopoly when it denied valuable documents and information to its partner, Intergraph.
- Intel's actions have prevented Intergraph from shipping products on time, Intergraph claimed in an antitrust lawsuit.
- The FTC is also investigating Intel's treatment of Digital. Digital filed a suit, now settled, against the chip maker for the same antitrust violations as Intergraph.

policies are based on the most conservative legal standards available."

The FTC news comes as no surprise to many industry watchers because Intel is the undisputed master of the PC and PC server chip markets and is rumored to use hardball tactics to get what it wants. And those that try to survive without a partnership with Intel are often at an unsurmountable disadvantage.

Last week, the *San Jose Mercury News* reported more instances

being already feuding. Intel voluntarily joined the suit and helped get it settled to keep the peace with Packard Bell. Calls to Compaq for comment went unreturned.

In another case, Acer America Corp. was suing a group of Taiwanese clone manufacturers for patent violations. Intel objected to Acer's lawsuit because it was a major supplier to the Taiwanese clone makers, and got Acer to back down, the report said. ■

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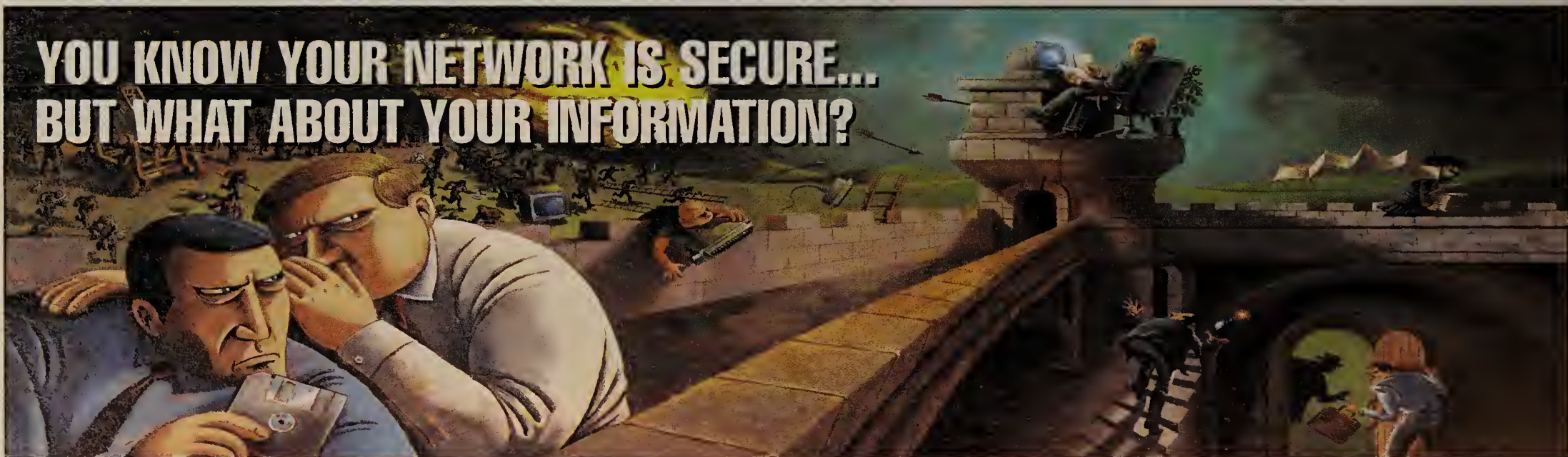
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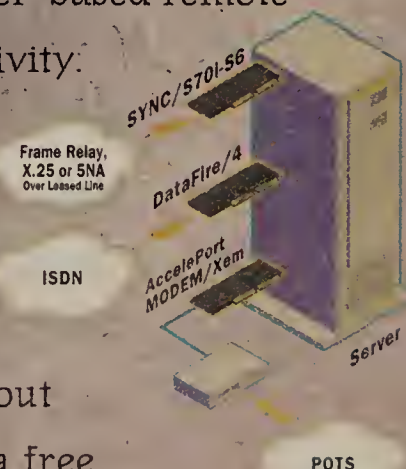
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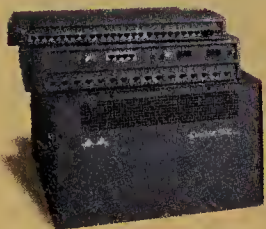
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Local Networks

Covering: LAN Hubs and Switches • Management • Operating Systems • Servers • Thin Clients

Briefs

■ **Intel Corp.** last week introduced the **Netport-Express 10/100 Print Server**, a device that will link almost any parallel port printer to 10M bit/sec or 100M bit/sec LANs. The server is based on a 486 processor and features 2M bytes of RAM. Intel also includes Windows- and browser-based management tools. The print server supports TCP/IP, IPX, NetBEUI, AppleTalk and other net protocols. It has a list price of \$299 and an estimated street price of \$250.

©Intel: (800) 538-3373

■ **Novell, Inc.** has named **Mike Sheridan**, one of the original **Java** creators at Sun Microsystems, Inc., as vice president of strategic businesses. Sheridan will report to Novell Chairman and CEO Eric Schmidt, a Java enthusiast who also used to work at Sun. Sheridan's job will be to work with Novell's business development and product teams to come up with new Java-oriented business opportunities and offerings. He most recently was director of Sun's Persona project, which focused on developing offerings for small businesses and individuals.

■ **Packet Engines, Inc.** has forged an alliance with **Znyx Corp.** under which Packet Engines will package its **Gigabit Ethernet** network interface card with Znyx's Rainlink software for load balancing and failover of NICs on Windows NT computers. Rainlink can minimize network downtime and aggregate links among NICs to provide bigger pipes with greater bandwidth. The software will work with Packet Engines' G-NIC, a 64-bit adapter for 32-bit and 64-bit PCI bus computers.

© Packet Engines: (509) 777-7000

New tools take pain out of NT management

Entevo offering paves way for directory-based management.

By John Cox

A new software suite lets systems administrators create a more complete view of their Windows NT networks than is possible today with NT's domain structure.

Entevo Corp.'s DirectManage 1.0 is designed to help customers build flexible, directory-based systems for managing enterprise NT networks.

The new offering reads the information held in the security database and registry of each networked NT machine. DirectManage then creates a unified, hierarchical picture of those resources — domains, users, applications and files — for all NT systems on the net (see graphic). Using this information, systems administrators can delegate management tasks to certain administrators or to a group of them.

DirectManage relies on Microsoft Corp.'s Active Directory Services Interface, an API that can be used to give third-party tools access to directory services, including those based on Microsoft's much-anticipated Active Directory. Microsoft considers Active Directory to be a key part of the company's upcoming NT 5.0 release, which is due out early next year.

Today, the applications that form the DirectManage suite "think they're talking to Active Directory," said Amir Hudda, Entevo's CEO. It's this sleight of hand that is used to create the

unified view of NT 3.51 and 4.0 users, accounts, applications and so on. These same applications will be able to run against Active Directory when it becomes available.

"DirectManage lets you con-

and security database and sends the information to the server program, which creates the hierarchical view.

Using the DirectAdmin user interface, managers can see and manage all users, groups,

"Without DirectScript, you have to check this [information] on a server-by-server basis, starting at the root of each directory, to see who has what permissions," Brand said.

One key capability that's missing from DirectManage is the ability to filter information being collected on remote systems, Brand said.

A filter program, for example, could sift out just information about user passwords. In NT today, according to Brand, managers have to dig through a mass of other user information associated with the password. DirectManage 1.0 costs \$19 per managed user account, with volume discounts available.

Managing NT events

Another company, Mission Critical Software, Inc., has also released a product for improving NT management by consolidating systems data from a network of NT machines.

Version 2.5 of Mission Critical's SeNtry Enterprise Event Manager (EEM) uses small agents on remote systems to send data from NT event logs to a central Microsoft SQL Server database. Once there, the data can be analyzed and arranged into reports via a graphical interface.

New features in Version 2.5 include a Web browser interface; a set of ready-to-use Knowledge Packs that collect data from specific applications, such as Microsoft Exchange Server; and a new reporting engine that works with an array of third-party tools.

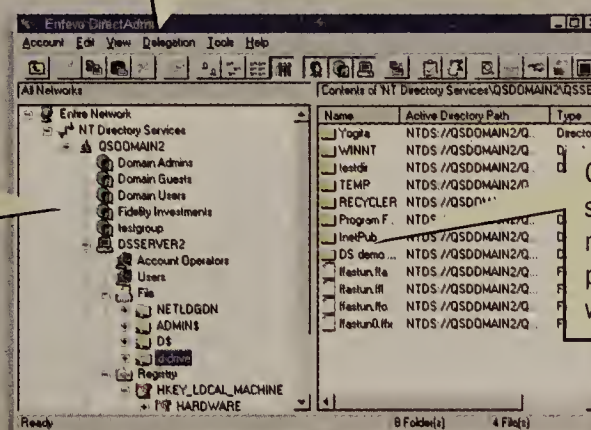
Pricing for SeNtry EEM is unchanged at \$995 per monitored server and \$50 per monitored workstation. The software, available now, runs on Intel and Alpha computers running Windows NT 3.51 or 4.0.

© Entevo: (703) 524-1900; Mission Critical: (888) 323-6768

UNIFYING YOUR NT NETWORK

DirectManage 1.0's DirectAdmin user interface, shown here, gives NT managers a hierarchical view of all NT resources on their networks. The companion application, DirectScript, gives managers a set of objects that can be combined with short scripts to manage tasks across NT servers.

Tasks such as authorizing password resets can be delegated to specific groups.



One or more files can be selected and access permission can be granted to particular users or groups with a few mouse clicks.

solidate all the NT domain information into one place," said Rick Villars, director of network software research at International Data Corp., a Framingham, Mass., market research firm. "Longer term, it's the first product I've seen that takes this to the next step — a framework to start building an enterprise directory, even before Active Directory is released."

DirectManage

DirectManage has two parts. The first is DirectAdmin, which consists of a user interface for administrators and a set of management tools. DirectAdmin is usually loaded on the main domain server. A compact, corresponding client program is loaded on each NT server to be monitored.

Each client program reads the local NT system's registry

systems and directories on an NT net, according to Joe Brand, lead network analyst at Nabisco, Inc. in Parsippany, N.J. Nabisco is testing DirectManage for use in the company's 350-server NT network.

DirectScript

The second part of DirectManage is called DirectScript. This is a collection of eight Component Object Model objects, each of which can handle a specific task, such as user management and file system security.

Nabisco managers have written short Microsoft Visual Basic scripts that use some of these objects to read the Access Control Lists on each NT system. This daily list reading now enables net managers to identify everyone who has access to specific directories and files.

Get more online:

- A compendium of NT tips from "Wired Windows" columnist Dave Kearns
- A review of NT domain administrators

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M E R I C A N
S Y M P O S I U M

New ON Technology management software state of the art

By Robln Schreier Hohman
Cambridge, Mass.

ON Technology Corp. has upgraded its ON Command Comprehensive Client Manager (CCM) software by adding support for industry management standards such as Intel Corp.'s Wired for Management Baseline (WfM) and 3Com Corp.'s Managed PC network information cards (NIC). CCM Version 4.0 will ship within 60 days.

The new standard support helps network managers automate enterprise-wide operating system migrations and set up new PCs without requiring a technician or end user to make changes to the desktop. Unlike the administrative functions in Microsoft Corp.'s Windows 98, ON Command CCM can be used to manage older desktop environments. CCM supports DOS, Windows 3.X, Windows 95 and NT clients.

The most important product change is support for WfM and Managed PC NICs. Both technologies allow Remote Wake Up and preboot execution for unattended operating system installation. The software also includes a Desktop Management Interface Version 2 browser, which improves help desk operations by showing a real-time view of the installed desktop software.

Without WfM or Managed PC NICs, network administrators have to add a boot PROM (programmable read-only memory) module to each NIC or use boot floppy disks to provide managed operating system installations.

"ON seems to hold the promise of allowing us to administer the NT desktop in the same fashion that we were using to administer the desktop with Sun," said Charles S. Dvorkin, vice president at the Teachers Insurance and Annuity Association College Retirement Equities Fund in New York, better known as TIAA-CREF.

Dvorkin has tested Version 4.0 in his lab for about a month and will begin to use it on his 350-node network in a few weeks. While he said the software ran properly, Dvorkin thought that the documentation and user interface needed improvement.

ON Technology, which mainly has been known for its Meeting Maker group scheduling software, is making a brave foray into a management market dominated by Tivoli Systems, Inc., Computer Associates International, Inc. and Hewlett-Packard Co., but it is not trying to compete directly with them. Instead, the company is targeting ON Command CCM for the small to mid-size networks.

At least one analyst thinks ON Technology has a chance. "The opportunity in the mid-size market is there

because these companies are beginning to go through what the large enterprises did a few years ago," said Stephen Elliot, a senior analyst for Network and Systems Management at

the Business Research Group in Newton, Mass.

ON Command CCM Version 4.0 is expected to ship within 60 days and will be priced between \$100 and \$195 per

desktop, depending on the total number of desktops managed. Additional Unix or NT server licenses are available at no charge.

© ON Technology: (617) 374-1400





More certification flimflam

Who would have thought that a column on certification would have struck such a chord, but it did — and I've

got a bulging inbox to prove it!

Among the hundreds of certifications (it's true, I counted) offered by Novell is

one called the Certified Internet Business Strategist (CIBS). This is a single test with two training courses. According to Novell, the CIBS "... sets an organization's Internet direction through a thorough understanding of Internet technology and its possible use in increasing productivity, expanding an organization's marketing reach and reducing customer

support costs." Whoa, that sounds like the sort of person every company with a Web site would want to have on staff.

A closer look at the training, though, shows otherwise. The two "courses" are one-day seminars. Prerequisite for one is that "... students should be familiar with computers and software. Internet experience is helpful." The second course requires that "students should have experience using Windows 95 and business productivity applications including a word processor." Nothing too stringent there.

The course descriptions certainly indicate you'll learn all you need — and all in only two days. In the first course, students learn to browse the Web; create HTML documents; send and receive e-mail; and participate in conferences, collaborative computing and groupware applications. The second course teaches participants how to place a business on the Internet and how to manage the development of a business Web site from inception to evaluation. That's a lot to learn in 12 to 14 hours, don't you think? How do they do it? Well, maybe they don't.

A closer look shows there's nothing in either course that even mentions Web servers (or mail servers, news servers, etc.).

Would you want your Web site developed, deployed and managed by someone who has no knowledge whatsoever of the capabilities of the various server platforms?

But the real time-saver, and the thing that labels this "certification" as no more than a giant marketing scheme, is the title of the second course. It's called "Mastering the 'Net with Netscape Communicator." No messing around with Internet Explorer for these business strategists.

Here's a tip that can be used in the hiring process — immediately eliminate anyone with CIBS on his resume. While it can be good to speak to Novell's marketing people, you really don't want to put one on your payroll.

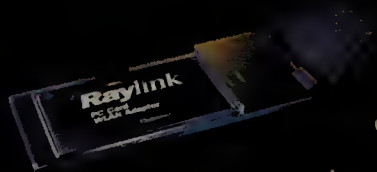
Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.



Dave Kearns

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Tip of the week

Innovative Software, Ltd. has released Version 5.0 of Ghost, the leading solution for workstation configuration cloning. With a new graphical user interface, improved multicasting and other new features, Ghost 5.0 can still clone workstations in minutes, installing operating systems such as Windows 95 and NT in a fraction of the usual time. If you have a lot of new systems to roll out, it's worth your time to investigate Ghost. Go to www.ghostsoft.com for all the details.

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Internetworks

Covering: TCP/IP • SNA • Network Management • Muxes, Routers and WAN switches • Remote Access

Briefs

■ **Bay Networks, Inc.** has unveiled a high-density Internet access concentrator that aggregates more than 1,000 dedicated lines. The Versalar 15000 has four slots to house any combination of three access modules: six-port channelized DS-3, dual-port channelized OC-3 and 672 channelized T-1s. On the trunk side, the Versalar 15000 can support redundant OC-12c ATM and packet-over-Synchronous Optical Network (SONET), OC-3c ATM and Gigabit Ethernet links. The Versalar 15000 can run up to three of Bay's programmable Route Switch Processors, which assign class-of-service and quality-of-service policies, and provide wire-speed packet forwarding, according to Bay. The access switch also runs Bay's BayRS routing software. The Versalar 15000 costs less than \$500 per T-1 and will ship in the first quarter of 1999.

© Bay: (978) 670-8888

■ Tired of logging in security codes generated by those credit-card-sized smart cards? Start-up **First Access** has announced First Access Enterprise, which includes a card that



enters security data into your workstation and boots up your PC when the card comes within four meters of the PC. The card reader attaches to the serial port of a PC. Client software sets security parameters. When they get close enough, the card and card reader exchange information via a process the company would not reveal. When you move the card away, the PC shuts down until the card comes back. The system costs \$189 per seat.

© First Access: 011 972/4840-3222

Label switching pumps up IP speed

Routers and switches use MPLS to communicate quality-of-service requests.

By Tim Greene

Users looking to speed traffic across IP networks should start paying closer attention to this acronym: MPLS.

Multi-protocol Label Switching, a technology designed to hurry traffic through routed networks, has been endorsed lately by four major switch vendors as a means to guarantee quality-of-service (QoS) levels across hybrid routed/switched networks.

Cisco Systems, Inc., Ascend Communications, Inc., Hughes Network Systems, Inc. and Lucent Technologies, Inc. have all recently adopted MPLS as a way to support IP intranets and virtual private networks (VPN) that require limited network delay.

In the short term, MPLS in combination with ATM is the only reliable way to translate IP

traffic priorities to switches, according to Tom Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J. "It is literally the only way that we know of to efficiently and scal-

ably map IP services to ATM infrastructure," Nolle said.

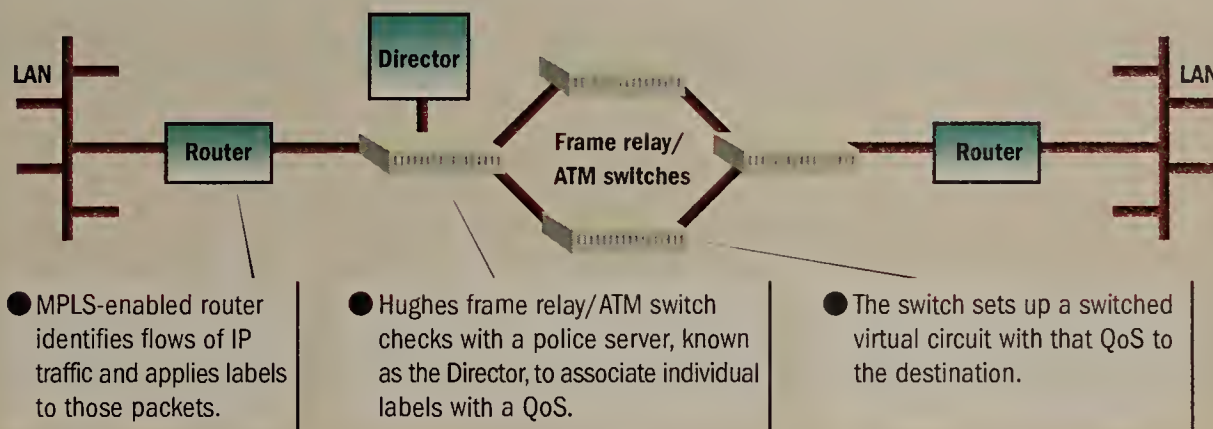
Using MPLS, designated traffic can demand and receive specific performance characteristics from the network.

Whether corporate users want to set up their own private networks with QoS guarantees or buy QoS IP services from a carrier, they should know about

See MPLS, page 30

HUGHES QUALITY-OF-SERVICE MODEL

Hughes Network Systems will employ MPLS to guarantee QoS levels across hybrid IP/frame relay/ATM networks.



MetaInfo boosts IP mgmt. software

By Marc Songini
Seattle

MetaInfo, Inc. last week introduced new management software that should help users more easily manage large amounts of IP addresses.

Meta IP 4.0 is reporting and auditing software that lets administrators preset user privileges and get detailed information on specific IP addresses.

In addition, Release 4.0 adds support for databases such as Microsoft Corp.'s Active Directory and Netscape Communications Corp.'s Directory Server that can be used with the Lightweight Directory Access Protocol (LDAP).

The new software also supports SNMP, giving users better capabilities for managing IP addresses remotely and across different hardware platforms.

SNMP hooks also let Meta IP 4.0 feed management and reporting details to centralized management packages such as Hewlett-Packard Co.'s OpenView platform.

Analysts said Meta IP 4.0's

improvements will help the product more effectively compete with IP administration tools from Microsoft that ship with Windows; QuadriTek System, Inc.'s QI; Bay Networks, Inc.'s NetID; and Competitive Automation, Inc.'s Join packages.

MetaInfo's primary strategy is to make IP address and IP management in general simpler so users don't need extensive IP management expertise to handle large IP environments, the company said.

Using LDAP for this sort of product is unique, said Jared Vogt, president of MetaInfo, which is a subsidiary of Check Point Software Technologies, Ltd.

"In the past, all other products had proprietary databases," Vogt said.

Meta IP allows for the auditing and reporting of network statistics and services, accord-

ing to the company.

The software keeps track of all IP addresses in the net and makes sure they can gain access to appropriate data and applications.

Meta IP runs on Windows NT. The software is made up of

PROFILE: METAINFO, INC.

Headquarters: Seattle

Founded: February 1995

Revenue: More than \$1 million

Ownership: Subsidiary of Check Point Software Technologies

Business: IP network management

Employees: 45

Customers: More than 10,000, including the government, schools and corporations

server and client components. The client feeds local information, such as IP addresses and resources, to the server.

IT staff can access auditing and administrative informa-

tion from a Java-enabled browser.

Some of the other features of the Meta IP 4.0 are:

- Domain Name System support, which monitors network services such as File Transfer Protocol, e-mail and Internet access capabilities.

- Java-based graphical user interface, which lets users view and manage Unix and NT net resources.

- A load balancing option, which will direct network resource requests to the server with the greatest accessible resources.

- Support for Remote Authentication Dial-In-User Service for off-site clients requiring access to net resources.

- Support for Dynamic Domain Name Service, which translates host computers' names into IP addresses, and Dynamic Host Configuration Protocol network servers, which automatically assigns IP addresses to network devices.

MetaIP will be available at the end of this month. Pricing starts at \$10,000.

© MetaInfo: (888) 638-2463

OneWorld unveils one box for remote access

By Tim Greene
Sunnyvale, Calif.

You may remember the folks at Global Planet, Inc. — the makers of modems for Macs.

Well forget them. They are selling off the modem business and changing their name. Later this month, Global Planet will become OneWorld Systems, Inc. and will introduce OneWorld 5000, a remote

access box for branch offices that can function as a remote access server, fax server and Internet router. OneWorld 5000 also can support dedicated and dial-up wide-area connections.

All those devices bought separately would cost more than \$8,000; OneWorld 5000 costs \$4,595, the company said.

"That is not smoke and mirrors. If you compare this to buying all this equipment a la carte, this is much less expensive," said Ray Boggs, an analyst with International Data Corp./LINK.

The box does pose one potential problem, according to Jon Allan, senior network analyst at Interactive Group in San Diego: It represents a single point of failure for multiple functions. "It's got the potential to hit you pretty hard," Allan said.

But Jeff Bagby, technical manager for Sony Signatures, Inc., who is beta-testing the box, said using multiple boxes to accomplish the same tasks as one OneWorld device adds an administrative burden.

The trade-off between ease of use and the single-point-of-failure risk is worth it, he said.

OneWorld's goal is to simplify remote access for small businesses and branch offices that have no dedicated IT staff, according to OneWorld President and CEO Neil Selvin.

The base model OneWorld 5000 comes with four 56K bit/sec modems, a 10M bit/sec Ethernet port and a cable port for 2M bit/sec Ethernet.

Any dial port can be used for fax, remote access or Internet access, which Selvin claims can reduce the number of individual phone lines an office needs to support all those applications.

A processor card and four modem ports, or four Basic Rate Interface ISDN lines, can be added.

Alternatively, the box can be upgraded with a single T-1 or Primary Rate Interface ISDN line plus three BRI lines. The T-1/PRI port can support 24 modem or ISDN calls.

The OneWorld 5000 basic software package supports dial-up remote access, and user name and password security. The basic package also supports dial-back security for remote users who generally call from the same number.

The basic software also supports IP and IPX routing to give multiple users Internet access. The box can limit Internet access rights by user and limit the length of time users spend on the 'Net. The box also logs user activity. A fax server for Macintosh or Windows computers can be added as well.

OneWorld 5000 ranges in price from \$2,495 to \$4,595 depending on configuration.

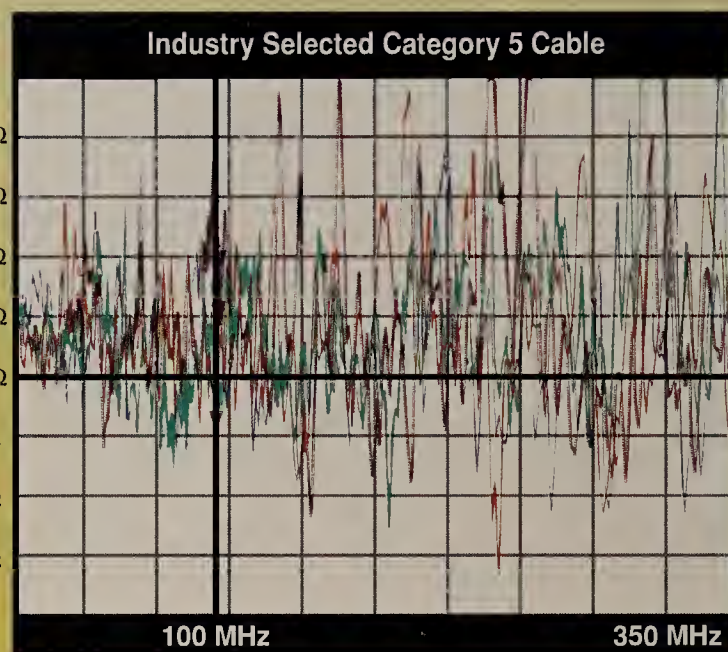
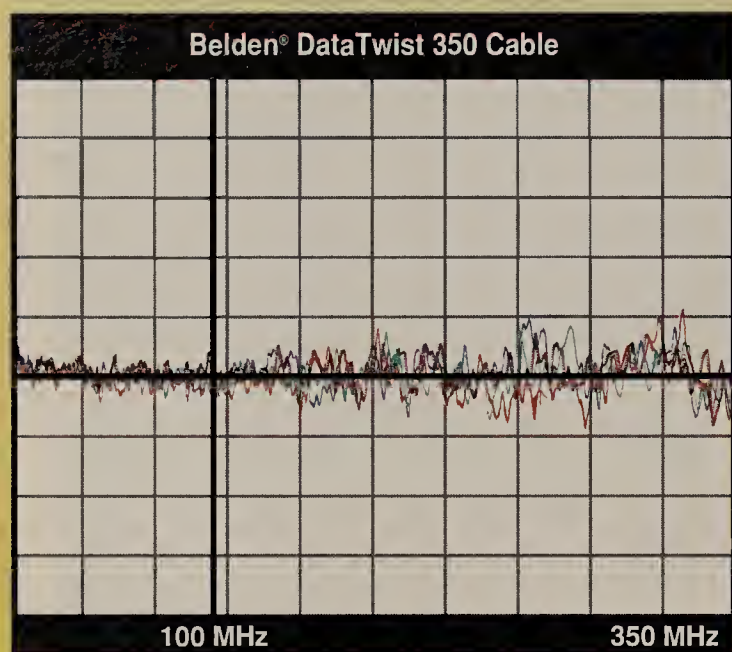
The four-port analog modem upgrade costs \$1,125. All products will be available in July.

The ISDN and T-1 upgrades have not been priced yet and will be available in the fourth quarter.

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MPLS

Continued from page 27

the technology.

MPLS simplifies the work a router does to forward packets so the router can work faster. Rather than having every router in a network look up the

destination of each packet in a route table and map that destination to a router port, the process is streamlined.

The initial router in an MPLS-enabled network does look up the destination of the packet in its route table, but rather than just forwarding the packet, the router also adds a label to it that indi-

cates where the packet has to go.

When subsequent routers in the network receive that packet, they read just the label and check it against their own label tables. The tables denote which router port the packet should exit to move toward its destination. The label table needs only as many entries as the

router has ports, which makes a much shorter list than the one listing all possible destination addresses in a network. Looking up a label requires less processing than finding a destination address in a route table, hence packets move faster across the network.

Different switch vendors use MPLS in different ways to map labels to QoS schemes they have set up in their frame relay and ATM switches.

Hughes employs a policy server called a Director that associates MPLS labels with virtual circuits. Virtual circuits can be engineered to carry traffic with defined delay characteristics. A packet coming from an MPLS-enabled router hits the switch, and the switch checks the label against the Director's label table and gets instructions to set up a switched virtual circuit for that traffic flow. That circuit can be assigned a standardized ATM QoS.

Hughes and Ascend have set up independent schemes for maintaining QoS across networks that include their frame relay as well as their ATM switches. In the Hughes strategy, the only time traffic is switched is when it requires QoS, otherwise traffic is routed, according to Kumar Shah, senior director of marketing for Hughes. "The only time we marry the worlds of routing and switching is when you want to deliver QoS," Shah said.

Maintaining QoS is key to an IP VPN, according to Dave Norton, process owner and team leader for American Standard Corp. in LaCrosse, Wis. American Standard's subsidiary, Trane Co., runs an IP VPN supported by Advanced Network & Services, Inc. Norton said certain client/server applications require responsiveness that pure routed networks — particularly public ones — cannot provide.

And he said that while network designs using MPLS to support QoS make sense, he had doubts about whether such networks could offer fast enough response times for applications such as voice and video. "I think it would be good for data but stay away from video and voice," he said. For those, Norton would recommend dedicated circuits, he said.

Without some plan for mapping IP QoS requests to ATM, there is no way today to offer QoS that has definable delay characteristics, according to Brett Azuma, an analyst with DataQuest in San Jose, Calif.

"ATM is the best game in town right now for absolute quality of service. It is the only game. IP just can't do it yet," Azuma said. ■

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What is the principal business activity at your location? (check one only)

- | | |
|---|--|
| 01. <input type="checkbox"/> Manufacturing (other) | 12. <input type="checkbox"/> Government (Federal/State/Local) |
| 02. <input type="checkbox"/> Finance/Banking | 13. <input type="checkbox"/> Military |
| 03. <input type="checkbox"/> Insurance/Real Estate/Legal | 14. <input type="checkbox"/> Aerospace |
| 04. <input type="checkbox"/> Health Care Services | 15. <input type="checkbox"/> Consulting (Independent)* |
| 05. <input type="checkbox"/> Hospitality/Entertainment/Recreation | 16. <input type="checkbox"/> Carriers/Interconnects |
| 06. <input type="checkbox"/> Media/TV/Cable/Radio/Print | 17. <input type="checkbox"/> Internet Service Provider (ISP) |
| 07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services | 18. <input type="checkbox"/> Manufacturing (Computer/Communications/OEM) |
| 08. <input type="checkbox"/> Transportation | 19. <input type="checkbox"/> Resellers of Computer/Network Products (VARs, VADs) |
| 09. <input type="checkbox"/> Utilities | 20. <input type="checkbox"/> Systems/Network Integrators* |
| 10. <input type="checkbox"/> Education | 21. <input type="checkbox"/> Distributors (Computer/Communications)* |
| 11. <input type="checkbox"/> Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry) | 22. <input type="checkbox"/> Other (please specify) _____ |

*Please complete form based on largest client.

2 What is your job function? (check one only)

NETWORK IS MANAGEMENT:

- | | |
|--|---|
| 1. <input type="checkbox"/> Network Management | 6. <input type="checkbox"/> Engineering Management |
| 2. <input type="checkbox"/> LAN Management | 7. <input type="checkbox"/> Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management) |
| 3. <input type="checkbox"/> Datacom/Telecom Management | 8. <input type="checkbox"/> Consultant (Independent) |
| 4. <input type="checkbox"/> IS, IT, MIS, CIO, Systems Management | 9. <input type="checkbox"/> Other (please specify) _____ |
| 5. <input type="checkbox"/> Internet/Intranet Management/Webmaster | |

3 What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please print the appropriate number code in the box next to each product category. Please complete ALL categories A-M.)

- | | | |
|-----------------------------------|---|--|
| 9. \$100 Million or More | A <input type="checkbox"/> Large Systems (Mainframes/Minis) | H <input type="checkbox"/> Internet |
| 0. \$50 Million to \$99.9 Million | B <input type="checkbox"/> Desktops (Micros/Laptops/Workstations) | I <input type="checkbox"/> Intranet |
| 2. \$25 Million to \$49.9 Million | C <input type="checkbox"/> Servers | J <input type="checkbox"/> Remote Access |
| 3. \$10 to \$24.9 Million | D <input type="checkbox"/> LANs | K <input type="checkbox"/> Peripherals |
| 4. \$1 to \$9.9 Million | E <input type="checkbox"/> WAN Equipment | L <input type="checkbox"/> Software |
| 5. \$100,000 to \$999,999 | F <input type="checkbox"/> Carrier Services | M <input type="checkbox"/> Service/Support |
| 6. \$50,000 to \$99,999 | G <input type="checkbox"/> Internetworking | |
| 7. Under \$50,000 | | |
| 8. None of the above | | |

4 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+ 2. ☐ 50-99 3. ☐ 20-49 4. ☐ 10-19 5. ☐ 2-9 6. ☐ 1 7. ☐ None

5 What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (Check one box in each column)

SERVERS		CLIENTS		LANs	
At Location	Entire Org.	At Location	Entire Org.	At Location	Entire Org.
A	B	C	D	E	F
<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>
<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>
<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>
<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>
<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>
<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>
<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>
<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>

6 What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)

1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve

4. ☐ Evaluate
5. ☐ Determine the need
6. ☐ None

7 What is the estimated number of employees at your location/in entire organization? (check one in each section)

A. At your location:

- | | |
|---|---|
| 1. <input type="checkbox"/> Over 20,000 | 5. <input type="checkbox"/> 1,000 - 2,499 |
| 2. <input type="checkbox"/> 10,000 - 19,999 | 6. <input type="checkbox"/> 500 - 999 |
| 3. <input type="checkbox"/> 5,000 - 9,999 | 7. <input type="checkbox"/> 499 or less |
| 4. <input type="checkbox"/> 2,500 - 4,999 | |

B. Entire organization:

- | | |
|---|---|
| 1. <input type="checkbox"/> Over 20,000 | 5. <input type="checkbox"/> 1,000 - 2,499 |
| 2. <input type="checkbox"/> 10,000 - 19,999 | 6. <input type="checkbox"/> 500 - 999 |
| 3. <input type="checkbox"/> 5,000 - 9,999 | 7. <input type="checkbox"/> 499 or less |
| 4. <input type="checkbox"/> 2,500 - 4,999 | |

8

Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (Check ALL that apply)

A. Currently involved in purchasing

B. Plan to purchase

INTERNET/INTRANET

- | | |
|--|---|
| A | B |
| <input type="checkbox"/> 01. <input type="checkbox"/> Internet Services | <input type="checkbox"/> 53. <input type="checkbox"/> Remote Access Products |
| <input type="checkbox"/> 02. <input type="checkbox"/> Firewalls/Security/Encryption | <input type="checkbox"/> 54. <input type="checkbox"/> Remote Access Services |
| <input type="checkbox"/> 03. <input type="checkbox"/> Internet Web Servers | <input type="checkbox"/> 55. <input type="checkbox"/> PDAs |
| <input type="checkbox"/> 04. <input type="checkbox"/> Intranet Web Servers | <input type="checkbox"/> 56. <input type="checkbox"/> PCMCIA Devices |
| <input type="checkbox"/> 05. <input type="checkbox"/> TCP/IP Software | <input type="checkbox"/> 57. <input type="checkbox"/> Wireless Data Services |
| <input type="checkbox"/> 06. <input type="checkbox"/> Management/Monitoring Software | <input type="checkbox"/> 58. <input type="checkbox"/> Wireless Data Equipment |
| <input type="checkbox"/> 07. <input type="checkbox"/> Push Technology | <input type="checkbox"/> 59. <input type="checkbox"/> Cellular Equipment & Services |
| <input type="checkbox"/> 08. <input type="checkbox"/> Web Browsers | |
| <input type="checkbox"/> 09. <input type="checkbox"/> Intranet Applications/Groupware | |
| <input type="checkbox"/> 10. <input type="checkbox"/> Search/Retrieval Products (web crawler) | |
| <input type="checkbox"/> 11. <input type="checkbox"/> Internet Development Tools (JAVA, ActiveX, etc.) | |
| <input type="checkbox"/> 12. <input type="checkbox"/> Electronic Commerce Tools | |
| <input type="checkbox"/> 13. <input type="checkbox"/> Internet Telephony | |

LOCAL-AREA NETWORKS

- | | |
|---|--|
| A | B |
| <input type="checkbox"/> 14. <input type="checkbox"/> Local-Area Networks | <input type="checkbox"/> 60. <input type="checkbox"/> Network Management |
| <input type="checkbox"/> 15. <input type="checkbox"/> Network Operating System Software | <input type="checkbox"/> 61. <input type="checkbox"/> Systems Management |
| <input type="checkbox"/> 16. <input type="checkbox"/> Servers | <input type="checkbox"/> 62. <input type="checkbox"/> Security |
| <input type="checkbox"/> 17. <input type="checkbox"/> Print Servers | <input type="checkbox"/> 63. <input type="checkbox"/> Communications Software |
| <input type="checkbox"/> 18. <input type="checkbox"/> ATM Switches | <input type="checkbox"/> 64. <input type="checkbox"/> Terminal Emulation |
| <input type="checkbox"/> 19. <input type="checkbox"/> Token-Ring Switches | <input type="checkbox"/> 65. <input type="checkbox"/> Operating Systems |
| <input type="checkbox"/> 20. <input type="checkbox"/> Ethernet Switches | <input type="checkbox"/> 66. <input type="checkbox"/> Applications Development Tools |
| <input type="checkbox"/> 21. <input type="checkbox"/> Fast Ethernet | <input type="checkbox"/> 67. <input type="checkbox"/> Database Management/RDBMS |
| <input type="checkbox"/> 22. <input type="checkbox"/> Gigabit Ethernet | <input type="checkbox"/> 68. <input type="checkbox"/> Groupware |
| <input type="checkbox"/> 23. <input type="checkbox"/> IP Switches | <input type="checkbox"/> 69. <input type="checkbox"/> Workflow |
| <input type="checkbox"/> 24. <input type="checkbox"/> LAN Storage/Backup | <input type="checkbox"/> 70. <input type="checkbox"/> EDI |
| <input type="checkbox"/> 25. <input type="checkbox"/> Optical LAN Storage/Backup | <input type="checkbox"/> 71. <input type="checkbox"/> E-mail |
| <input type="checkbox"/> 26. <input type="checkbox"/> Disk LAN Storage/Backup | <input type="checkbox"/> 72. <input type="checkbox"/> Desktop Video Conferencing |
| <input type="checkbox"/> 27. <input type="checkbox"/> Tape LAN Storage/Backup | <input type="checkbox"/> 73. <input type="checkbox"/> Imaging |
| <input type="checkbox"/> 28. <input type="checkbox"/> RAID LAN Storage/Backup | <input type="checkbox"/> 74. <input type="checkbox"/> Suites/Server Suites (Back Office, etc.) |
| <input type="checkbox"/> 29. <input type="checkbox"/> Network Test/Diagnostic Tools | <input type="checkbox"/> 75. <input type="checkbox"/> Middleware |
| <input type="checkbox"/> 30. <input type="checkbox"/> Cables, Connectors, Baluns | <input type="checkbox"/> 76. <input type="checkbox"/> Document Management |
| <input type="checkbox"/> 31. <input type="checkbox"/> UPS | <input type="checkbox"/> 77. <input type="checkbox"/> Site Metering Tools |
| <input type="checkbox"/> 32. <input type="checkbox"/> Network Interface Cards | <input type="checkbox"/> 78. <input type="checkbox"/> Computer Telephony Integration (CTI) |
| <input type="checkbox"/> 33. <input type="checkbox"/> SNMP Network Management | <input type="checkbox"/> 79. <input type="checkbox"/> Data Warehousing |

INTERNETWORKING

- | | |
|---|--|
| A | B |
| <input type="checkbox"/> 34. <input type="checkbox"/> Routers | <input type="checkbox"/> 80. <input type="checkbox"/> Modems |
| <input type="checkbox"/> 35. <input type="checkbox"/> Hubs | <input type="checkbox"/> 81. <input type="checkbox"/> Asynchronous Transfer Mode (ATM) |
| <input type="checkbox"/> 36. <input type="checkbox"/> Intelligent Hubs | <input type="checkbox"/> 82. <input type="checkbox"/> Frame Relay Equipment/Services |
| <input type="checkbox"/> 37. <input type="checkbox"/> Stackable Hubs | <input type="checkbox"/> 83. <input type="checkbox"/> ISDN Equipment & Services |
| <input type="checkbox"/> 38. <input type="checkbox"/> Bridge/Router | <input type="checkbox"/> 84. <input type="checkbox"/> FT-1/T-1/T-3 Multiplexers/Services |
| <input type="checkbox"/> 39. <input type="checkbox"/> Bridges | <input type="checkbox"/> 85. <input type="checkbox"/> DSL Services/Products |
| <input type="checkbox"/> 40. <input type="checkbox"/> Gateways | <input type="checkbox"/> 86. <input type="checkbox"/> SONET |
| <input type="checkbox"/> 41. <input type="checkbox"/> Concentrators/Repeaters | <input type="checkbox"/> 87. <input type="checkbox"/> Inverse Multiplexers |

COMPUTERS/PERIPHERALS

- | | |
|--|--|
| A | B |
| <input type="checkbox"/> 42. <input type="checkbox"/> Network Computers | <input type="checkbox"/> 88. <input type="checkbox"/> SMDS |
| <input type="checkbox"/> 43. <input type="checkbox"/> Laptops/Notebooks/Sub-Notebooks | <input type="checkbox"/> 89. <input type="checkbox"/> Diagnostic/Test Equipment |
| <input type="checkbox"/> 44. <input type="checkbox"/> Micros/PCs | <input type="checkbox"/> 90. <input type="checkbox"/> DSU/CSU |
| <input type="checkbox"/> 45. <input type="checkbox"/> Minis | <input type="checkbox"/> 91. <input type="checkbox"/> VSAT/Satellite |
| <input type="checkbox"/> 46. <input type="checkbox"/> Mainframes | <input type="checkbox"/> 92. <input type="checkbox"/> PBXs |
| <input type="checkbox"/> 47. <input type="checkbox"/> Workstations | <input type="checkbox"/> 93. <input type="checkbox"/> Voice Mail/Response |
| <input type="checkbox"/> 48. <input type="checkbox"/> Printers/Network Printers | <input type="checkbox"/> 94. <input type="checkbox"/> Videoconferencing |
| <input type="checkbox"/> 49. <input type="checkbox"/> CD-ROM | <input type="checkbox"/> 95. <input type="checkbox"/> Leased Lines |
| <input type="checkbox"/> 50. <input type="checkbox"/> Fax/Modem Boards | <input type="checkbox"/> 96. <input type="checkbox"/> Switched Data |
| <input type="checkbox"/> 51. <input type="checkbox"/> Graphics/Multimedia/Audio/Video Boards | <input type="checkbox"/> 97. <input type="checkbox"/> Virtual Networks |
| <input type="checkbox"/> 52. <input type="checkbox"/> Memory/Chips/Boards/Cards | <input type="checkbox"/> 98. <input type="checkbox"/> Outsourcing/Systems Integration Services |
| | <input type="checkbox"/> 99. <input type="checkbox"/> Education/Training Services |

9

Please indicate the platforms that are currently installed/planned:

(Check ALL that apply)

A. Currently installed

B. Planned for purchase

NETWORK PROTOCOLS

- | | |
|--|--|
| A | B |
| <input type="checkbox"/> 01. <input type="checkbox"/> TCP/IP | <input type="checkbox"/> 25. <input type="checkbox"/> Windows NT |
| <input type="checkbox"/> 02. <input type="checkbox"/> IPv6 | <input type="checkbox"/> 26. <input type="checkbox"/> Windows NT/Advanced Server |
| <input type="checkbox"/> 03. <input type="checkbox"/> SNA | <input type="checkbox"/> 27. <input type="checkbox"/> Novell IntranetWare |
| <input type="checkbox"/> 04. <input type="checkbox"/> DECnet | <input type="checkbox"/> 28. <input type="checkbox"/> Novell (NetWare 4.X) |
| <input type="checkbox"/> 05. <input type="checkbox"/> Novell IPX/SPX | <input type="checkbox"/> 29. <input type="checkbox"/> Novell (NetWare 2.X, 3.X) |
| <input type="checkbox"/> 06. <input type="checkbox"/> APPC/APPN/LU 6.2 | <input type="checkbox"/> 30. <input type="checkbox"/> Microsoft (LAN Manager) |
| <input type="checkbox"/> 07. <input type="checkbox"/> NETBIOS | <input type="checkbox"/> 31. <input type="checkbox"/> LocalTalk (AppleTalk) |
| <input type="checkbox"/> 08. <input type="checkbox"/> AppleTalk | <input type="checkbox"/> 32. <input type="checkbox"/> Banyan (VINES) |
| <input type="checkbox"/> 09. <input type="checkbox"/> NFS | <input type="checkbox"/> 33. <input type="checkbox"/> IBM (LAN Server) |
| <input type="checkbox"/> 10. <input type="checkbox"/> Other (please specify) _____ | <input type="checkbox"/> 34. <input type="checkbox"/> Artisoft (LANtastic) |

LAN ENVIRONMENT

- | | |
|--|--|
| A | B |
| <input type="checkbox"/> 11. <input type="checkbox"/> Gigabit Ethernet | <input type="checkbox"/> 35. <input type="checkbox"/> Other (please specify) _____ |
| <input type="checkbox"/> 12. <input type="checkbox"/> Switched Ethernet | |
| <input type="checkbox"/> 13. <input type="checkbox"/> Fast Ethernet (100 Megabit Ethernet) | |
| <input type="checkbox"/> 14. <input type="checkbox"/> Ethernet | |
| <input type="checkbox"/> 15. <input type="checkbox"/> ATM | |
| <input type="checkbox"/> 16. <input type="checkbox"/> Token Ring/Token Ring Switching | |
| <input type="checkbox"/> 17. <input type="checkbox"/> IP Switching | |
| <input type="checkbox"/> 18. <input type="checkbox"/> FDDI | |
| <input type="checkbox"/> 19. <input type="checkbox"/> 100Base-T | |
| <input type="checkbox"/> 20. <input type="checkbox"/> 10Base-T | |
| <input type="checkbox"/> 21. <input type="checkbox"/> LocalTalk | |
| <input type="checkbox"/> 22. <input type="checkbox"/> Fibre Channel | |
| <input type="checkbox"/> 23. <input type="checkbox"/> 100vg Any LAN | |
| <input type="checkbox"/> 24. <input type="checkbox"/> Other (please specify) _____ | |

NETWORK OPERATING SYSTEM

- | | |
|--|--|
| A | B |
| <input type="checkbox"/> 25. <input type="checkbox"/> Windows NT | <input type="checkbox"/> 36. <input type="checkbox"/> NT Server |
| <input type="checkbox"/> 26. <input type="checkbox"/> Windows NT/Advanced Server | <input type="checkbox"/> 37. <input type="checkbox"/> NT Workstation |
| <input type="checkbox"/> 27. <input type="checkbox"/> Novell IntranetWare | <input type="checkbox"/> 38. <input type="checkbox"/> Unix/Xenix/AIX |
| <input type="checkbox"/> 28. <input type="checkbox"/> Novell (NetWare 4.X) | <input type="checkbox"/> 39. <input type="checkbox"/> Solaris |
| <input type="checkbox"/> 29. <input type="checkbox"/> Novell (NetWare 2.X, 3.X) | <input type="checkbox"/> 40. <input type="checkbox"/> Windows |
| <input type="checkbox"/> 30. <input type="checkbox"/> Microsoft (LAN Manager) | <input type="checkbox"/> 41. <input type="checkbox"/> Windows 95 |
| <input type="checkbox"/> 31. <input type="checkbox"/> LocalTalk (AppleTalk) | <input type="checkbox"/> 42. <input type="checkbox"/> Windows 97 |
| <input type="checkbox"/> 32. <input type="checkbox"/> Banyan (VINES) | <input type="checkbox"/> 43. <input type="checkbox"/> DOS |
| <input type="checkbox"/> 33. <input type="checkbox"/> IBM (LAN Server) | <input type="checkbox"/> 44. <input type="checkbox"/> OS/2/OS/2 Warp |
| <input type="checkbox"/> 34. <input type="checkbox"/> Artisoft (LANtastic) | <input type="checkbox"/> 45. <input type="checkbox"/> IBM MVS/VM/VSE |
| <input type="checkbox"/> 35. <input type="checkbox"/> Other (please specify) _____ | <input type="checkbox"/> 46. <input type="checkbox"/> Digital VMS |

COMPUTER OPERATING SYSTEM

- | | |
|--|--|
| A | B |
| <input type="checkbox"/> 36. <input type="checkbox"/> NT Server | <input type="checkbox"/> 47. <input type="checkbox"/> Macintosh |
| <input type="checkbox"/> 37. <input type="checkbox"/> NT Workstation | <input type="checkbox"/> 48. <input type="checkbox"/> Other (please specify) _____ |
| <input type="checkbox"/> 38. <input type="checkbox"/> Unix/Xenix/AIX | |
| <input type="checkbox"/> 39. <input type="checkbox"/> Solaris | |
| <input type="checkbox"/> 40. <input type="checkbox"/> Windows | |
| <input type="checkbox"/> 41. <input type="checkbox"/> Windows 95 | |
| <input type="checkbox"/> 42. <input type="checkbox"/> Windows 97 | |
| <input type="checkbox"/> 43. <input type="checkbox"/> DOS | |
| <input type="checkbox"/> 44. <input type="checkbox"/> OS/2/OS/2 Warp | |
| <input type="checkbox"/> 45. <input type="checkbox"/> IBM MVS/VM/VSE | |
| <input type="checkbox"/> 46. <input type="checkbox"/> Digital VMS | |
| <input type="checkbox"/> 47. <input type="checkbox"/> Macintosh | |
| <input type="checkbox"/> 48. <input type="checkbox"/> Other (please specify) _____ | |

☐ 49. ☐ None of the above (1-48)

10

Which of the following Servers/Clients do you have installed/planned at your location? (check ALL that apply in each column)

	A. Servers	B. Clients		A. Servers	B. Clients
Power PC	<input type="checkbox"/> 01. <input type="checkbox"/>	<input type="checkbox"/>	486	<input type="checkbox"/> 07. <input type="checkbox"/>	<input type="checkbox"/>
Power Mac	<input type="checkbox"/> 02. <input type="checkbox"/>	<input type="checkbox"/>	386	<input type="checkbox"/> 08. <input type="checkbox"/>	<input type="checkbox"/>
Mac Other	<input type="checkbox"/> 03. <input type="checkbox"/>	<input type="checkbox"/>	286	<input type="checkbox"/> 09. <input type="checkbox"/>	<input type="checkbox"/>
Multiprocessor Servers	<input type="checkbox"/> 04. <input type="checkbox"/>	<input type="checkbox"/>	Rise	<input type="checkbox"/> 10. <input type="checkbox"/>	<input type="checkbox"/>
PG/PII	<input type="checkbox"/> 05. <input type="checkbox"/>	<input type="checkbox"/>	Alpha	<input type="checkbox"/> 11. <input type="checkbox"/>	<input type="checkbox"/>
Pentium/Pentium Pro	<input type="checkbox"/> 06. <input type="checkbox"/>	<input type="checkbox"/>	Other	<input type="checkbox"/> 12. <input type="checkbox"/>	<input type="checkbox"/>

11

Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Mainframes (Large Scale) Installed/Planned

1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other _____</

Please indicate the names and job functions of other individuals at your location to whom you would like us to send a copy of **NetworkWorld**.

Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____

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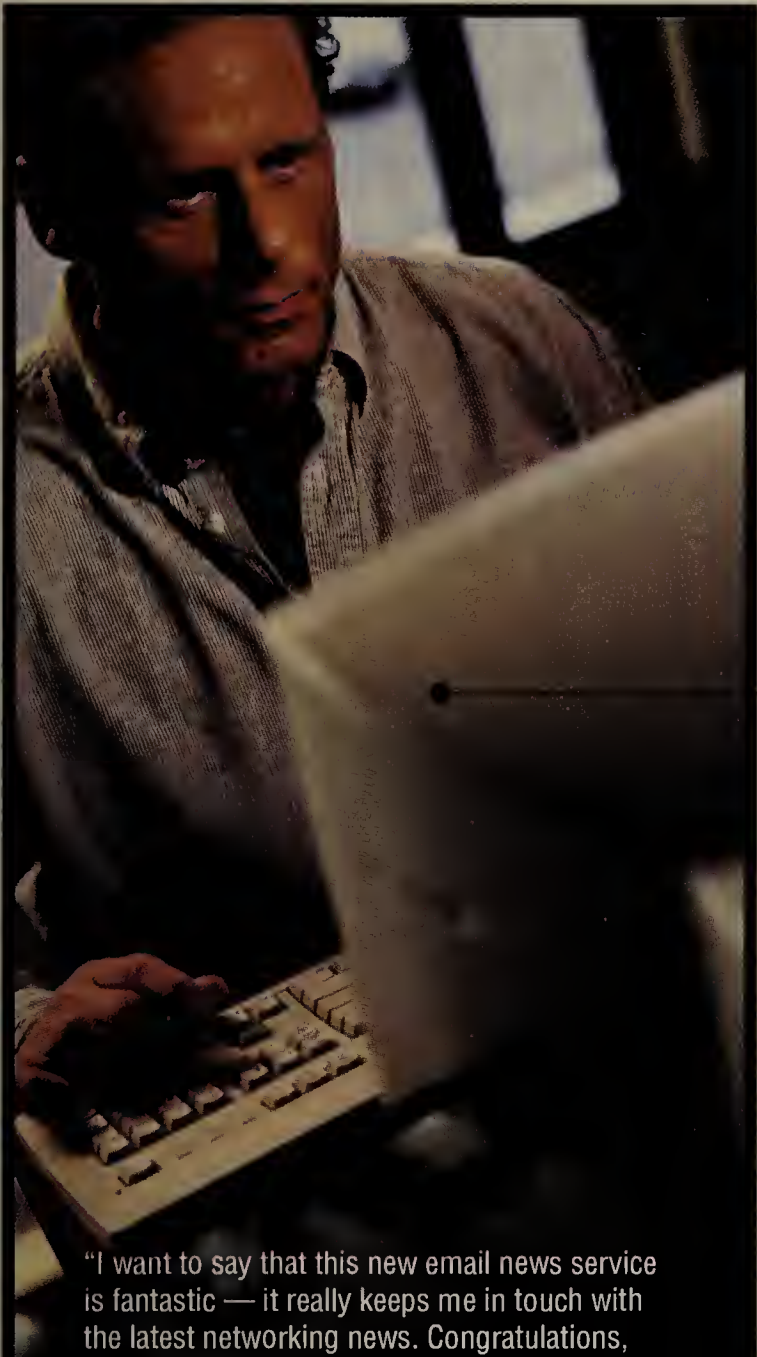
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"I want to say that this new email news service is fantastic — it really keeps me in touch with the latest networking news. Congratulations, and keep up these kinds of efforts."

Jaime Botello, Networking Engineer Manager
Información Selectiva S.A. de C.V.

"I have just received and read my first couple of newsletters and am very impressed. Good content and nicely compact. Thanks!"

Dave Eguchi, ISSB Webmaster
Hawaii Department of Education

"I just wanted to drop a quick note to compliment you and your staff on the 'focus' newsletter idea. Being able to zero in electronically on the issues that we're interested in is a major benefit to folks like me who don't have a lot of time. Thanks for the great idea!"

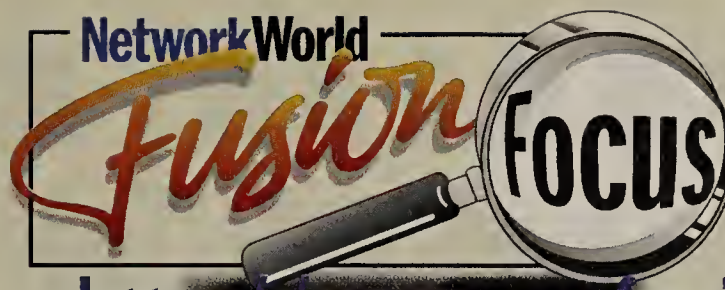
Joe Brem, Communications Manager
A Fortune 1000 Company

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Hewlett-Packard Co.

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Ty Cooper, Network Administrator
Kajax Engineering, Inc.



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THE WEB SITE FOR NETWORK IS

Router evolution

Finding new uses for routers



Users are saving money, time and administration effort by redeploying traditional routers to the edge of their enterprise networks.

Layer 3 switches are taking on virtually all of the duties once assumed by software-based routers because Layer 3 switches are nothing more than faster, cheaper routers. Layer 3 switches calculate and distribute IP route information using a protocol such as Routing Information Protocol or Open Shortest Path First (OSPF). The switches also perform route table lookups, cache known routes and forward packets based on destination IP addresses.

And the switches do all this at about one-tenth the cost and 10 times the speed of traditional routers. Some Layer 3 switches, which do much of their packet processing in hardware, forward 7 million packet/sec and cost \$650 per 100M bit/sec Fast Ethernet port. Conversely, traditional routers, which perform most routing functions in software, forward 500,000 packet/sec and cost \$4,000 to \$5,000 per Fast Ethernet port.

The only duties most Layer 3 switches do not perform are multiprotocol routing and WAN access. For some users, these jobs are now the sole domain of the older, slower, traditional software-based routers.

"If you weren't running AppleTalk or IPX you wouldn't need [routers]," says James Weidel, director of networking at the University of Southern California (USC) in Los Angeles. "And if you weren't going anywhere you wouldn't need a router at all with the Layer 3 switches."

USC recently reached a juncture where it had to either upgrade a number of old Cisco Systems, Inc. AGS+ routers or replace them with Layer 3 switches. The school chose the latter option.

"We threw in the switches and then we did upgrade a couple of the routers to [Cisco] 7500s and basically put them on the edge of the cloud so we could route in between clouds," Weidel says.

The Layer 3 switches, which are Cabletron Systems, Inc. SmartSwitches, will switch IP packets through that cloud without ever touching the router, Weidel says. "Once they set up a connection, they're flying. Everything's running at switch speed at that point."

The 7500s route packets between the clouds and handle legacy, or non-IP, traffic, Weidel says. In all, USC has replaced seven AGS+ routers with SmartSwitches and two 7500s.

Union Pacific Railroad in Omaha, Neb., plans to replace its Bay Networks, Inc. Backbone Node (BN) router in its data center with a Layer 2/Layer 3 switch, such as those in Bay's Accelar 1000 series. The router would then provide access to the WAN and to local user segments, says Brett Frankenberger, systems engineer at the rail company.

By Jim Duffy

"The direction we're looking toward is to bring Gigabit Ethernet out of the router into a high-end Layer 3 switch, and that would basically replace the FDDI rings and token rings that are in the data center now," Frankenberger says. "The departmental rings are still going to plug into ports on the router."

Miami-Dade Community College in Miami is freeing up some LAN ports on its routers by replacing the router with Layer 3 switches. The school is a big Bay shop.

"Before we were using the BN as a WAN router

handling the IPX traffic.

"I'm not aware of any Layer 3 switches right now that do IPX routing," James says.

Exodus Communications doesn't have any IPX worries. But the Web server hosting company has plenty of IP routing to think about.

Exodus pushed its Cisco 75XX routers to the LAN/WAN edge when Cisco released the Route Switch Module (RSM) for its Catalyst 5000 line of switches. Previously Layer 2-only devices in Exodus' network, the Catalyst 5000s with the RSM quickly assumed the Layer 3 LAN subnetting role of the 7500s. Subnetting usually involves defining a group of users as a single entity sharing a single IP address.

A Catalyst 5000 with an RSM performs all the functions of a 7500 router. And when combined with a Cisco NetFlow fast cache daughtercard, the Catalyst 5000/RSM combination can pump out 2 million packet/sec, Cisco says.

Despite all of the apparent upsides to Layer 3 switches, they are not for everybody. Financial services giant USAA in San Antonio, Texas, has a huge network — 30,000 users in 200 virtual LANs — that is anchored by 78 Cisco 7513 routers.

"It's very much a routed network," says Michael Sjolander, manager of network LAN services at USAA.

USAA's network is divided into 17 "electronic communities" of 2,000 to 2,500 users and 12 VLANs apiece. Electronic communities are largely segregated from each other to isolate faults and broadcast storms, and for unique naming schemes, Sjolander says.

Each VLAN within an electronic community is a separate subnet, and the 7513s do a lot of routing of IP and IBM Advanced Peer-to-Peer Networking traffic within electronic communities and across the WAN to regional offices. The VLANs are configured with Cisco Catalyst 5000 Fast Ethernet departmental and wiring closet switches, and LightStream 1010 ATM backbone switches.

Even though the backbone is switched, it is a Layer 2 switched backbone; all Layer 3 duties are handled by the Cisco routers, Sjolander says.

Why?

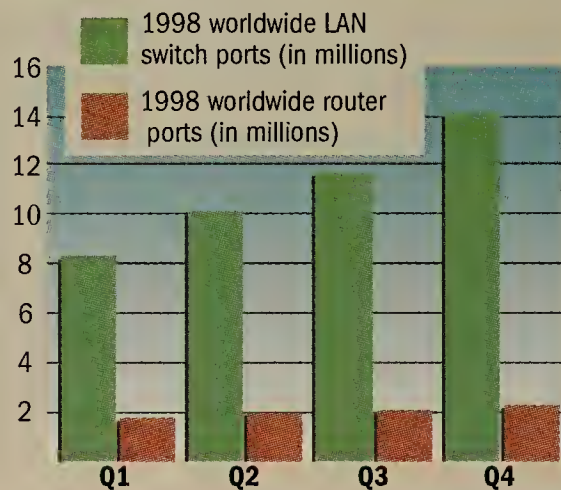
"[A switched network] would be too complicated. We'd be back in a mesh situation of all nodes talking to all nodes," Sjolander says, not to mention the considerable amount of APPN traffic that Layer 3 switches can't send.

USAA tried building a switched Layer 3 network at one time but ran into implementation and application problems, Sjolander says. Implementation issues aside, he thinks USAA's network is too complex for the faster, cheaper Layer 3 switches.

"I don't foresee going back to that, not with this network," Sjolander says. ■

A SWITCH AND ROUTER MARKET SNAPSHOT

Both the LAN switch and router markets will continue to grow this year.



SOURCE: DELL'ORO GROUP, PORTOLA VALLEY, CALIF.

and as a LAN router," says Miguel Corteguera, enterprise network manager at Miami-Dade. "When we installed the Accelar [switch], we moved all those 100M bit/sec ports to the Accelar, and it freed up the 100M bit/sec ports on the router. We're connecting two 100M bit/sec connections [from the Accelar] to the routers that are doing the WAN traffic."

The Accelar switches are performing full IP routing — running OSPF and calculating routes — but only on a local level. BN routers are still handling WAN routing, including AppleTalk and IPX routing across the WAN, Corteguera says.

Community First Bancshares, Inc. in Fargo, N.D., used to use Novell servers to route IPX. The company then flattened out the network with Layer 2 switches, and implemented Layer 3 switching to subnet LAN segments. The company installed Bay's Accelar Layer 3 switches.

"We do have a router still in place to route between our internal network and our wide-area segment where we have our server farm," says Randy James, vice president of development at Community First Bancshares. That router is also

RUNNING ENTERPRISE APPLICATIONS ON AN NT SERVER?

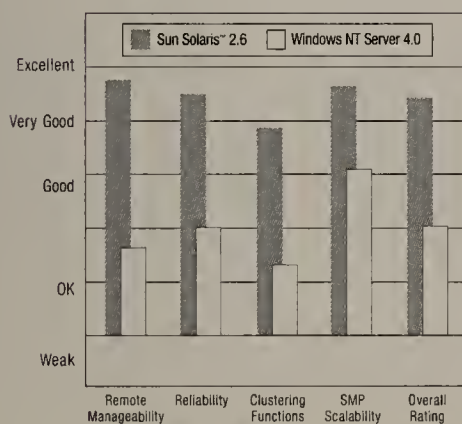
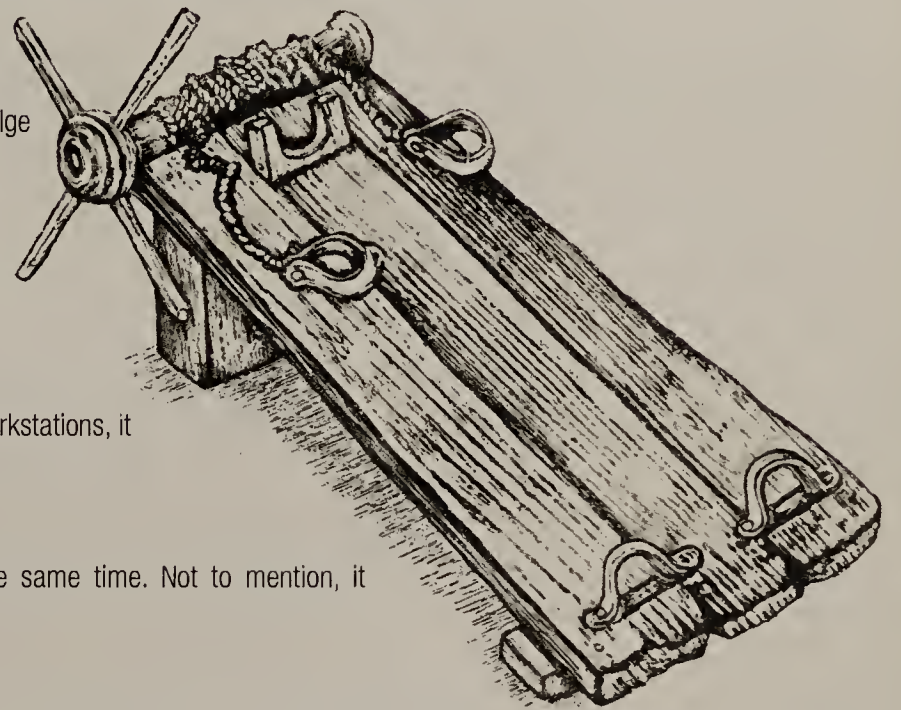
Whatever you choose to do in the privacy of your own office is your business. But if you rely on a Microsoft Windows NT Server to run your

company's key business applications, the result could be torturous. In fact, according to D.H. Brown, servers running on Windows NT "con-

tinue to fall short of being able to support enterprise requirements.*" So why not indulge

in something a bit less agonizing? The Sun™ Enterprise™ 450 Workgroup Server,

starting below \$15,000, not only delivers print and file services for your PCs and workstations, it



*D.H. Brown Associates, Inc., March 1998

runs multiple enterprise applications at the same time. Not to mention, it

whipped NT in datawarehousing, Lotus Domino, Web and SAP performance. And because

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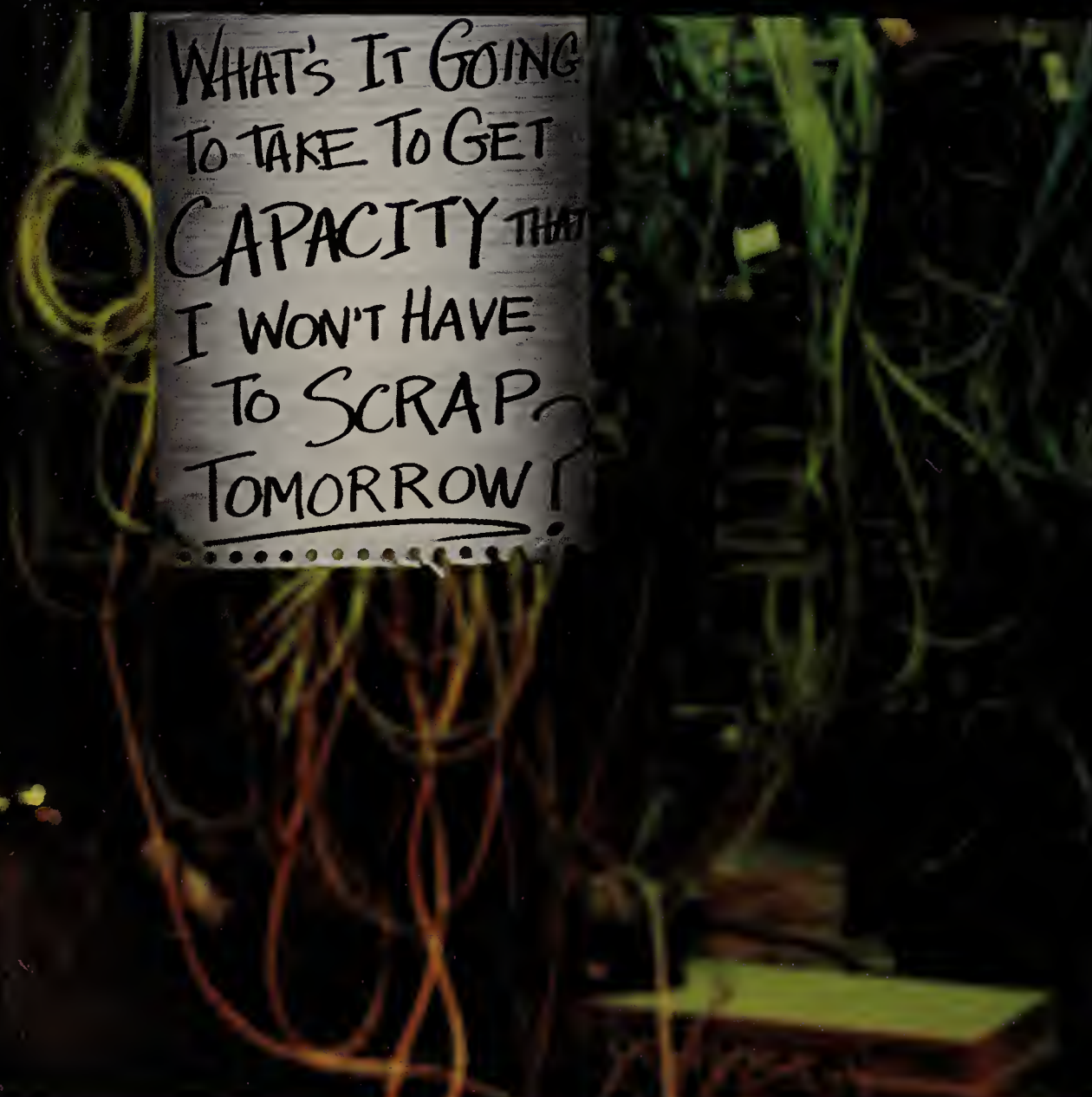
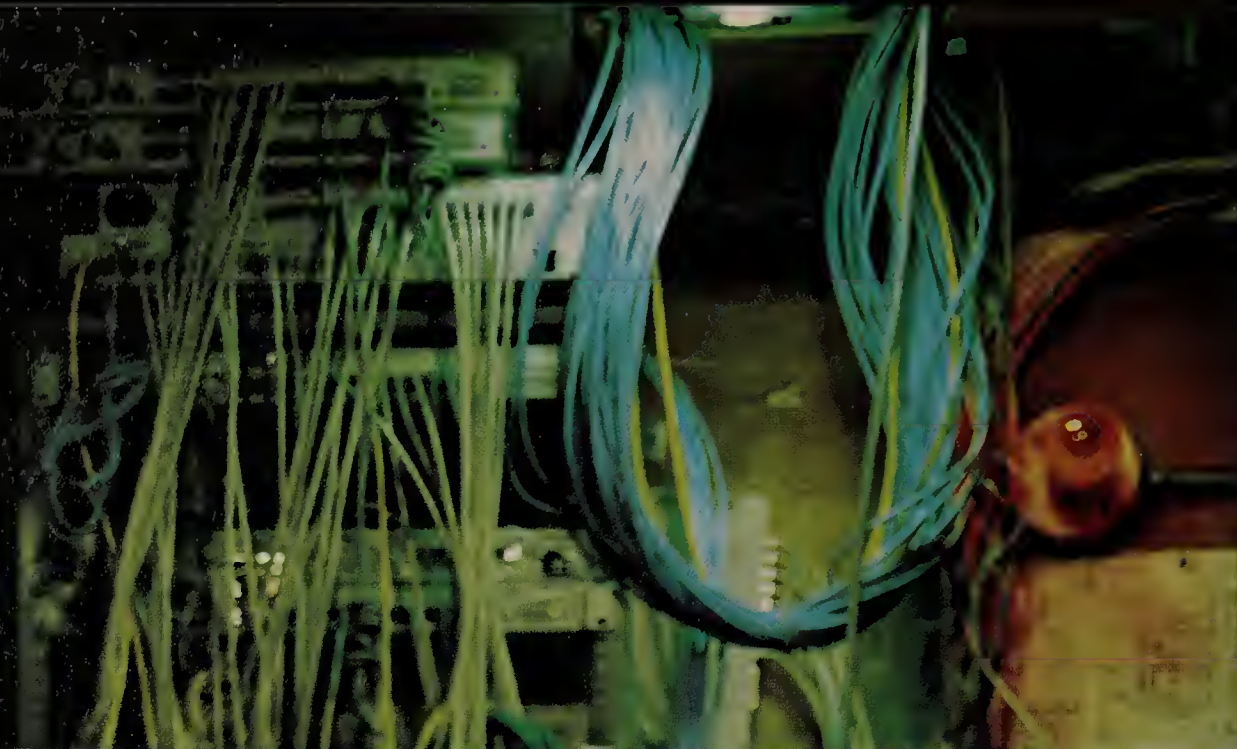


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Briefs

■ **Kathryn Brown** *this week takes office as chief of the Federal Communications Commission's* **Common Carrier Bureau**, the FCC's top position regulating long-distance and local carriers. Her views on carriers' requirements to interconnect their local networks with competitors and related issues are similar to those of outgoing Chief Richard Metzger. Brown was associate administrator of the Department of Commerce's National Telecommunications and Information Administration.

■ **Netcom On-Line Communication Services, Inc.**, a subsidiary of ICG Communications, Inc., last month announced that company **CEO David Garrison is resigning**. According to a statement, Garrison is leaving Netcom to "pursue other interests." Eric Spivey, Netcom's president and chief operating officer of three months, will replace Garrison on June 19. Spivey joined Netcom in January 1996 as president of Netcom International.

■ **PSINet, Inc.** is beefing up the northeastern piece of its Internet backbone. The Herndon, Va., ISP recently **purchased 18 dark fiber-optic strands** between Washington, D.C. and New York. PSINet expects the bandwidth will eventually be able to carry 96G bit/sec worth of Internet traffic when opto-electronic equipment is deployed.
© PSINet: (703) 904-4100

■ **GE Capital SpaceNet Services, Inc.** announced it's providing **Hollywood Entertainment Corp.** with very small aperture terminal satellite services. The national video store rental chain is using GE's Skystar Advantage LANplus VSAT services to support its corporate intranet and credit card authorizations, and for price file update downloads.

The restructuring of Sprint PCS

Sprint takes full control of digital wireless group as cable partners bow out.

By Denise Pappalardo
Kansas City, Mo.

Just a few short years after the formation of Sprint PCS through a partnership of Sprint Corp. and three prominent cable television companies, the joint venture is no more.

Sprint is taking full control of Sprint PCS by buying the stock held by its cable television partners Tele-Communications, Inc. (TCI), Comcast Corp. and Cox Communications, Inc., which will end the four-year partnership with them.

Specifically, Sprint plans to issue shares of a new common PCS stock to the cable partners in exchange for their interest. Sprint will offer more stock in an initial public offering (IPO) later this year. The Sprint PCS IPO is expected to raise between \$500 million and \$1 billion, the company said.

The three cable companies were no longer interested in pursuing the wireless service market that Sprint PCS targets

Restructuring Sprint PCS

- Sprint Corp. gets 100% ownership and management of Sprint PCS.
- Sprint PCS will have its own publicly traded stock.
- Sprint Corp. will receive 53% of Sprint PCS stock.
- The original Sprint PCS joint venture partners will get 47% interest in Sprint PCS in exchange for their interest in the wireless carrier.
- France Telecom and Deutsche Telekom, Sprint's Global One partners, will purchase a 20% voting in Sprint PCS.

with its digital personal communications services, said Tom Murphy, a communications director at Sprint PCS.

Aside from creating Sprint PCS stock, Sprint is integrating Phillie Co., a regional wireless carrier that was owned by the joint venture, in to Sprint PCS.

The restructuring of Sprint PCS is expected to bring new

and more focused capital to the wireless communications company, said Bob Egan, a director at Gartner Group, Inc., a Stamford, Conn.-based consulting firm.

It will be easier for Sprint PCS executives to decide how to spend company money and what new services to offer without having to consult three cable partners that may not have the same agenda, said Simon Reeves, senior analyst at

Decision Resources, Inc., a Waltham, Mass.-based consulting firm. This may be the biggest impact for Sprint PCS customers, he said.

And users expect Sprint to continue improving services.

"Sprint PCS offers low-cost calling plans because their network is larger than most," said Nancy Crilly, the ultrasound

group facilities manager at Issaquah, Wash.-based Siemens Medical Systems, Inc. "But, they still need to do more."

While Crilly credits Sprint PCS with low-cost service offerings, she does not like the fact that when she drives outside of a major metropolitan area, her calls are often dropped.

This happens because in areas where Sprint does not have digital antennas, digital calls are transferred to analog antennas where calls are often dropped. "Most wireless carriers will tell you this doesn't happen with their services, but it actually happens with most," said Reeves of Decision Resources. ■

Get more online:

A look at the issues involved in interfacing PCS with traditional landline networks



www.nwfusion.com

Infonet to beef up international SLAs

By David Rohde
El Segundo, Calif.

A U.S.-based international carrier is working to beef up typically weak international frame relay service-level agreements (SLA) with new, more comprehensive network availability guarantees.

Infonet Services Corp., an international value-added network carrier with access points in 180 countries, later this year is planning to introduce new SLAs that incorporate cross-border trunking and local loops. The move is intended to equalize the measurements of domestic and international SLAs for multinational corporations looking to bind carriers to service levels.

Typical domestic network-availability SLAs cover a long-distance carrier's network from switch to switch. Some frame relay SLAs also incorporate local loops if the access line is T-1 or

The winner's platform

Global carrier Infontet is planning to beef up its frame relay service-level agreements with the following classes:

- | | |
|---|---|
| ● Current SLA
Guarantees network availability* of Infontet switch port in a given city or country | ● Silver SLA
Guarantees availability of the entire end-to-end circuit, including the PVC and both local loops |
| ● Bronze SLA
Guarantees availability of ports plus the PVC between two Infontet switches | ● Gold SLA
Guarantees availability of end-to-end circuit plus additional measurements such as network delay |

* Network availability measured on a percentage basis, such as 99.9% or 99.5%

higher, or if the user subscribes to a higher priced service optimized for delay-sensitive applications (NW, June 1, page 40).

By contrast, international network-availability SLAs often are no more than "local port availability" guarantees, according to

Kent Lowell, Infontet's product marketing manager for monitoring, reporting and SLAs.

For example, Infontet currently divides countries into three major groups based on local communications infrastructure. So-called A regions include

the U.S., Canada, Western Europe and most of the Pacific Rim. B regions consist of Eastern Europe, most of Latin America and Southern Africa, while C regions are comprised of less-developed nations where Infontet has a point of presence.

Infontet offers a port availability guarantee of 99.9% in A regions and 99.5% in B regions. C regions are set case by case.

The carrier is working on what it has code-named the Bronze SLA to include the permanent virtual circuit (PVC) uptime measurement. Infontet plans to offer Silver and Gold SLAs, which will include the local loops to provide an end-to-end uptime guarantee (see graphic).

However, the same level of availability of the port switch — such as 99.9% — may not carry through to the new SLAs. In each local market, Infontet must assemble a database of local experience before it can attach a percentage number to the Silver and Gold SLAs, Lowell said. ■

Union to continue merger opposition

By David Rohde
Washington, D.C.

One of the most active opponents of the pending merger between WorldCom,

Inc. and MCI Communications Corp. was not placated by MCI's recent announcement that the carrier would sell off its wholesale IP network.

Officials with the Communications Workers of America (CWA) — the telecommunications industry's principal labor union — told *Network World* they

will "absolutely not" drop their opposition to the merger.

CWA's decision to fight could delay a final ruling on the merger, an action that does not sit well with some users looking for an end to what they report as uncertainty within the ranks of MCI account managers.

MCI recently announced it will sell its wholesale Internet backbone to Cable & Wireless plc for \$625 million (NW, June 1, page 8). But CWA research economist Debbie Goldman, who is leading the charge against the merger, demanded that MCI sell off internetMCI customer accounts, as well.

"We have other concerns, too," Goldman said. "We think this is a merger about running away from residential customers and dumping their low-margin businesses."

In fact, Goldman said she could not foresee any circumstances under which CWA would drop its fight against the merger. Analysts said that's largely because CWA doesn't like either company's labor policies, though the union has downplayed that angle in antimerger filings and publicity.

CWA President Morton Bahr has claimed that the merger would result in a loss of jobs overall. "Don't believe what MCI WorldCom says about no major layoffs," Bahr warned at a recent CWA-sponsored conference on the merger. "There is just no way that WorldCom can achieve the necessary \$20 billion in savings for the deal without cutting jobs."



CWA President
Morton Bahr

CWA is also maintaining a Web site — www.stopmciworldcom.org — as a clearinghouse for antimerger activities. But further delays in either approving or rejecting the WorldCom/MCI merger leaves some MCI customers queasy.

Anthony Tanzi, director of communications at Brown University's Computer & Information Services unit, said he recently could not obtain a T-3 circuit from MCI to connect his Providence, R.I., campus to MCI's Boston point of presence for the very high-speed Backbone Network Service (vBNS).

Tanzi needed the circuit to connect Brown to vBNS, but he was told by MCI officials that "merger paralysis" — due to a cap on capital expenditures while the deal awaits regulatory approval — made circuits unavailable. Tanzi said the merger trend is a "natural evolution" of the market and expects facilities to reopen if the merger is approved, especially given WorldCom's emphasis on broadband IP nets.

Oddly enough, Tanzi eventually got the needed T-3 not from one of the WorldCom/MCI merger opponents, but from Teleport Communications Group, Inc., the pending merger partner of AT&T. ■

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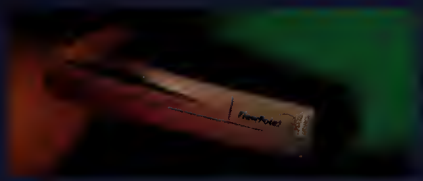
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WAN MONITOR

Datacom: Mach 5 with your hair on fire!

Everyone has at least one friend that could be described as an adrenaline junkie, someone who's not happy unless he's going Mach 5 with his hair on

fire. You can probably describe the whole data communications industry the same way. The need for speed seems insatiable. But while faster products seem to get a

lot hype, the speed of a network really isn't the end goal. Look at wire-speed routing — it frees the network to go faster. But is this the main problem keeping net

administrators up at night? No way.

What these folks need besides speed are capabilities that allow service providers to build a single, ubiquitous, highly available public network infrastructure. An infrastructure that will support mission-critical applications, such as electronic commerce, payroll and inventory applications in addition to e-mail, file transfers and lower priority applications. The network would identify and appropriately handle real-time applications that are sensitive to delay and those that aren't.

This implies highly granular qualities of service (QoS), eventually tied to and driven by end-user policy management systems. It also implies reliable and rapid traffic rerouting around failures and the ability to mix IP with non-IP traffic.

All the wire-speed routing companies prophesize some type of QoS delivery. There are differences in implementations. To simplify, you could boil it down to the "pure IP" implementations, such



Daniel Briere
Christine Heckart

as Avici Systems and Nexabit, vs. those doing IP over ATM using Multi-Protocol Label Switching (MPLS). Vendors in this camp include Ascend, Argon, Cisco and NetCore.

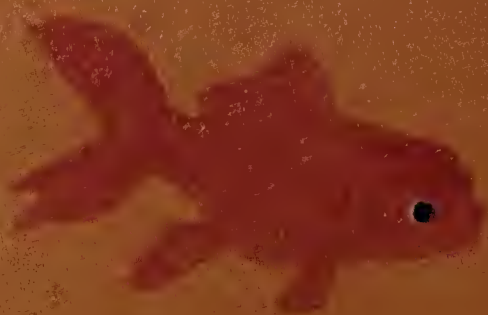
There will be supply and demand for both approaches. The plan that incorporates an underlying ATM and MPLS infrastructure will be more attractive to service providers planning to deliver a range of IP and non-IP services and application support over a single integrated network. The pure IP approach may be more attractive to the ISP delivering strictly IP-based services. Understanding your service provider's architecture and philosophy will help you make decisions today that won't hamstring you tomorrow (see related story, page 49).

As you formulate your virtual private network, intranet or extranet strategy, evaluate your equipment and service providers' attitudes and implementation plans. How consistent are the plans with your future goals and needs? Will the implementation deliver an offering granular enough for QoS assignment? Will it be end to end? What are the tools for fine-tuning the network and for assigning relative and absolute service qualities? Do you need to support protocols other than IP? How are real-time applications supported, and how does the network treat the applications relative to less time-sensitive ones?

Beware of claims that speed or bandwidth alone can solve a problem.

Briere is president and Heckart is vice president of TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and heckart@telechoice.com.

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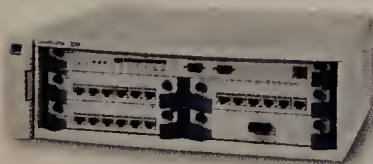
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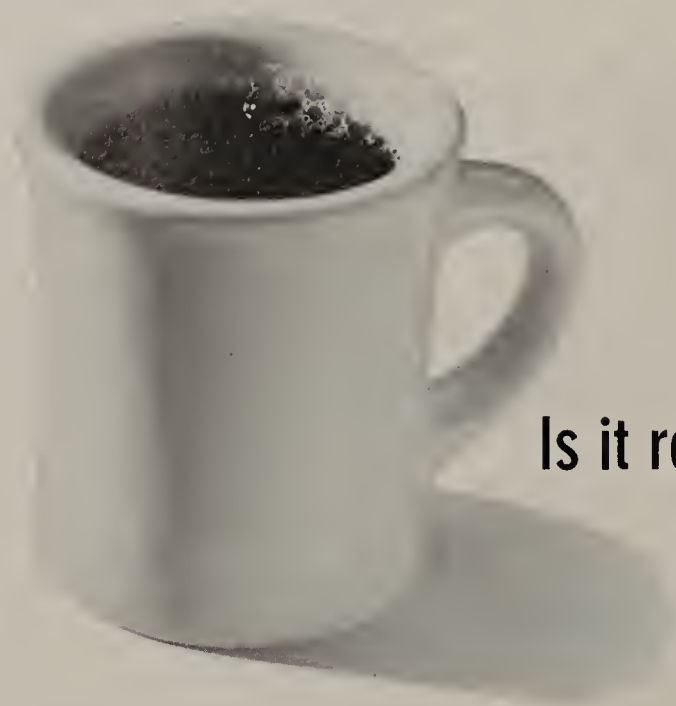


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Is it really "morning coffee" if you're having it at two in the morning?

Interesting how the perception of the work "day" has changed, particularly for the communications professional. In this age when the term "morning commute" can refer as easily to the trip home *from* work as the trip to work, and the midnight snack is often pulled from the office refrigerator, one thing is certain: you need a partner that works the same schedule you do.

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Briefs

■ **Start-up WebLogic, Inc.** today announced a new version of its Java application server that fully supports the **Enterprise Java-Bean (EJB) 1.0** specification. WebLogic officials said *Tengah 3.1* is the first commercial product that enables users to implement the EJB server-side transactional component standard developed by Sun Microsystems, Inc., IBM and other Java vendors. Java developers can use EJB components to build, deploy and manage portable applications, said Scott Dietzen, marketing vice president at WebLogic. A beta version of *Tengah 3.1* is available on WebLogic's home page at www.weblogic.com. Final release is scheduled for July, with server prices starting at \$9,995.



■ **Netegrity, Inc.** today began shipping **SiteMinder 3.0**, software that lets network managers set up single sign-on access controls for Web pages. *SiteMinder 3.0* ships with a central policy-management console for setting up user privileges. *SiteMinder* requires that its Web-agent software be loaded onto each Web server in order to properly authenticate the user's identity via logon, dynamic password tokens or, as of July, digital certificates. *SiteMinder* starts at \$3,995.

■ **The Electric Mail Company, Inc.** last week announced a new release of its **Also Known As (AKA)** service. AKA is a Web-based service that allows end users to customize and self-manage Internet e-mail addresses and routing instructions. Among the added features are mailing list, automatic response and account management tools. AKA costs \$60 per month for 100 addressing entries.

©Electric Mail: (800) 419-7463

Extranets stress security safeguards

Dynamic passwords prove an effective way to ward off hackers.

By Ellen Messmer

Extranets sound like a brilliant idea; just open your intranet up to customers and wait for the benefits of closer communication to come pouring in. But not every potential visitor is a loyal customer, which means that network managers have to protect their nets from infiltrators.

This extranet challenge often means taking a hard look at improving security procedures. That's what had to be done in Santa Clara County, Calif., where the ClariNet WAN is operated for the benefit of county employees. When the county decided to give hundreds of non-county employees access to databases on ClariNet, the network staff confronted the inconvenient fact that simple passwords/ID logons just aren't good enough anymore. To protect the network, County Network Manager Dean Leinebarger led a team that decided to forego the usual password/ID remote access logon routine in favor of more secure "dynamic" passwords generated by hardware and software tokens.

Why? "Reusable passwords are too easy for hackers to sniff," Leinebarger said. "In addition, passwords sometimes get shared among users."

Now the County has started

giving out Axent Technologies, Inc. CryptoCard hardware tokens to business partners, including equipment vendors

anything suspicious. "We are prepared to prosecute this type of behavior," Williams emphasized. Like the rest of the county, Santa Clara Medical Center is switching from simple password/ID logon to CryptoCard authentication at its firewall, the Guantlet from Network Associates, Inc.

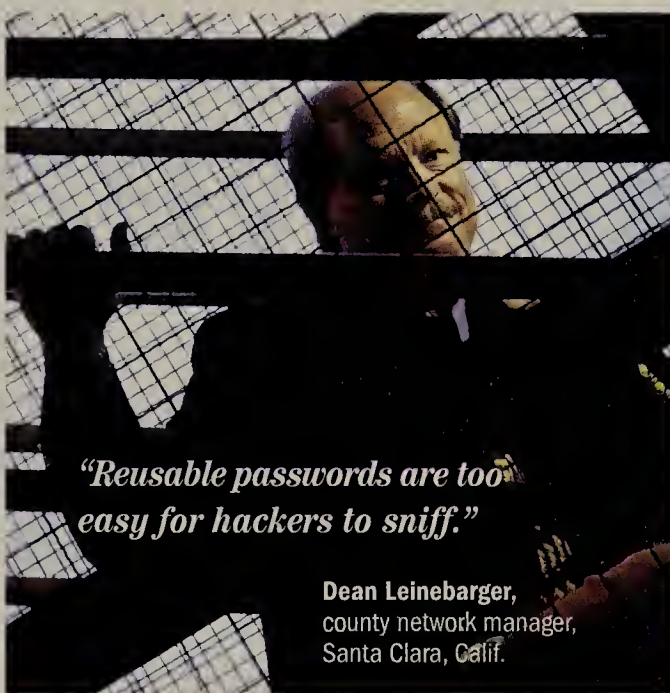
The evolution of intranets into extranets is having a wide impact across software applications.

Take Lotus Development Corp.'s Domino server, which gives users access to Lotus Notes databases over the Internet through the Notes proprietary client or a Web browser. With the Notes client, security controls can be set for user access to the server, the database, the form view and

the document. But this same level of granularity is not possible with a Web browser. "We can do more for the Notes client," acknowledged Kevin Lynch, product manager for Domino Server at Lotus.

The more network managers learn about security, the greater it seems their dissatisfaction is with existing controls. Michael Mazzotta, network design engineer at Walt Disney Co., constantly worries about vulnerabilities in the SNMP/Remote Monitoring protocols implemented in a wide range of switching gear.

For instance, the older version of SNMP lets anyone check the users, traffic, IP address mapping and topology of the intranet if they know how to send an SNMP request called "read community." Later versions of SNMP, such as Version 2 and the just-finalized Version 3, are better, but apparently haven't been widely implemented, Mazzotta said. ■



"Reusable passwords are too easy for hackers to sniff."

Dean Leinebarger,
county network manager,
Santa Clara, Calif.

that perform remote maintenance on ClariNet gear.

Using the CryptoCards, users can create a one-time dynamic password for authentication by the Cisco Systems, Inc. Secure Server that ClariNet had already installed for remote access. Similar to other brands of palm-size security hardware, CryptoCards generate a different password each time they get used.

With intranets turning so quickly into extranets, concerns that hackers may also be barging their way in has everyone rightfully concerned. How bleak is the hacker situation? Ask Steve Williams, network administrator at the Santa Clara Medical Center. Williams said that would-be hackers, armed with modem autodialer software available off the 'Net, are continually collecting as much information as possible about telephone and computer modem lines so they can try to take advantage of the medical center's networks.

The medical center, which keeps an audit trail of all call activity, has now installed what it calls a tripwire system that automatically contacts the District Attorney's office when it spots

Get more online:

● A guide to finding the best extranet model for your business

● A look at Tivoli's extranet management suite

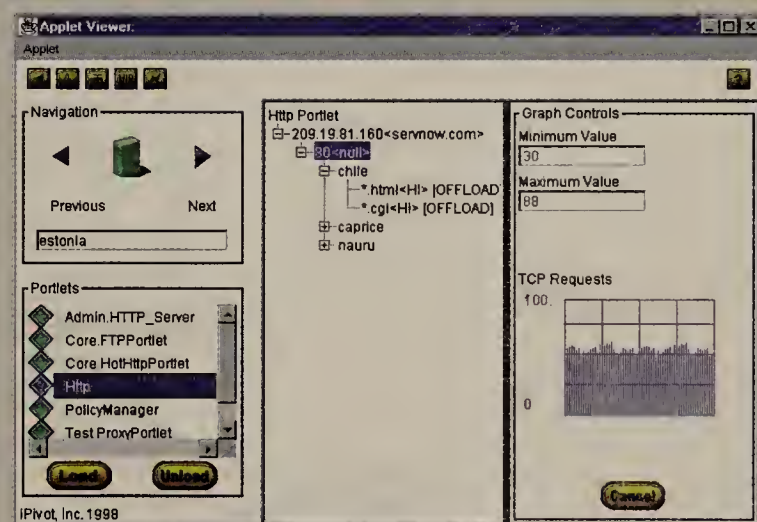
● Predictions from Sybase about how extranets will replace EDI



www.nwfusion.com

QUICK TAKE: QoS

IPivot directs network traffic

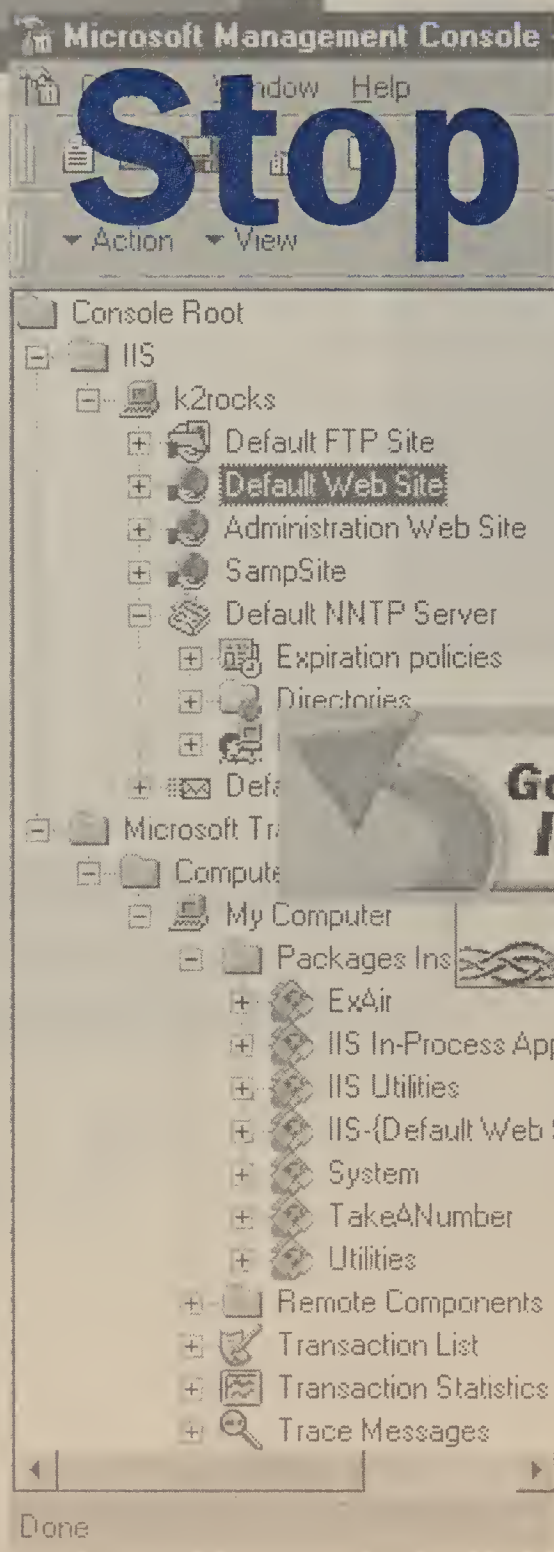


IPivot, Inc. has introduced its first product, QoS, a hardware/software combo that reportedly smooths the process of connecting users to the World Wide Web over a distributed network. QoS works like a load balancer by providing automatic routing of users to the proper server in a farm, based on the load across the servers as well as the type of file and/or protocol requested. The product also comes with a Java interface, which enables the administrator to oversee response times and set policies.

Pricing for QoS starts at \$25,000. It is slated to be available by the end of this month.

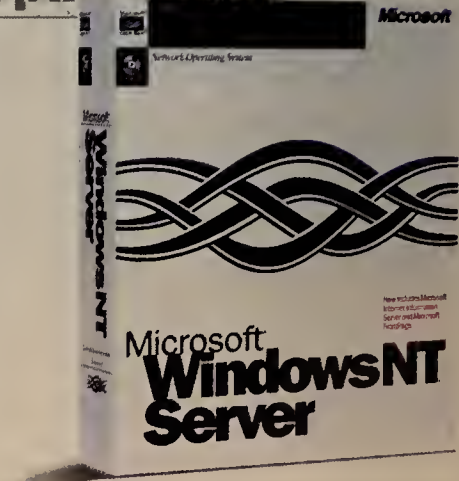
IPivot: (619) 679-7858

Web appl Stop sweating the and start

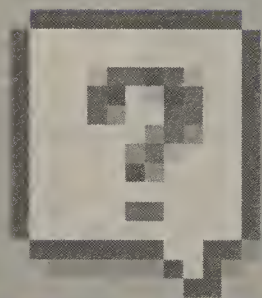


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Information and downloads: www.microsoft.com/ntserver/go/

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'NET INSIDER

Developing an anti-Internet

I'm starting to hear about an Internet I do not recognize.

A number of speakers at the recent Vortex98 meeting (referred to by

Network World Editor in Chief John Gallant in his May 25 editorial) and some of the speakers at the Second International Harvard Conference on

Internet and Society (<http://cybercon98.harvard.edu>) talked of an Internet that might have been brought to you by the old Bell telephone system.

Oracle Chairman and CEO Larry Ellison, speaking at the Harvard conference, described a network computer-based Internet in which the average user would only have a Web browser. In this

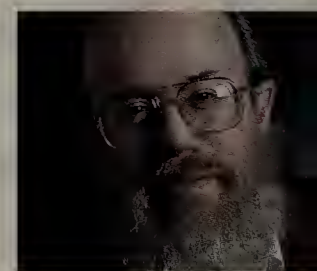
Internet, what is on the desktop is simple — very simple — and is supported by services in the network.

At Vortex98, three separate speakers from companies that make big phone switches talked about a future Internet involving some level of convergence between the current Internet and the current phone system.

The Internet described by these people looks, on the surface, similar to the Internet of tomorrow that many of us envision: A ubiquitous connectivity service that supports applications from browsing to real-time voice and video. But looking a bit closer, one sees that the vision these speakers talked about is what might be called the anti-Internet.

The most important feature of the Internet is its support for experimentation. This comes from the use of common, open, standards-based interconnection protocols that are used to transport information for applications.

These applications reside on computers at the 'Net's periphery and can make use of support services scattered around the 'Net, such as the Domain Name System. These applications generally can run even in the absence of all services other than the forwarding of packets.



Scott Bradner

Things are different in the phone network, where applications reside on servers that are operated by phone companies. These servers are in the phone switches and service nodes. The user only has access to a very dumb node indeed — a telephone. New applications are added to the phone network by modifying the network's servers. But users can't do this.

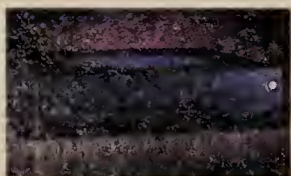
I suppose we should expect that people from the traditional telephony and mainframe worlds would see the freedom to experiment on the Internet as confusing to users.

But the Internet of these telephony and mainframe folks is not an Internet that I would be all too happy with. This Internet would result in the same dramatic lack of innovation that we have become all too familiar with in the phone system.

I'd rather keep the Internet we have today. Sure, some things could be better. For example, we could use controllable quality of service, and we at the IETF are working on that. But when you consider the alternative vision being presented, the risk of a little bit of confusion does not look all that terrible.

Disclaimer: Confusion, for lack of a better term, is good at Harvard because it is the unconfused who have stopped thinking. The above confusion is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.



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Bruce Kirkby OAS 1997

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Technology Update

Covering: Evolving Technologies and Standards

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I've been directed to set up a Web site so our customers can find out about our products, learn how to reach us for more information and possibly place online orders. However, I have a very small budget. How can I accomplish this task without hiring a programmer and installing a direct Internet connection?

Via the Internet

You have several possibilities. Microsoft Corp., for example, offers FrontPage 98. With this package, you would be able to design your Web site in a WYSIWYG environment. Using a design wizard, you would apply a "theme," which is a predefined collection of background graphics, buttons and other elements, and start putting the information together from there. You could build in just about anything you can imagine.

When you get more comfortable with how things go together, you could look at the raw HTML code behind the Web pages. Once you are ready, establishing an Internet connection and clicking on the "Publish" button will upload your site to the designated Web server. After the upload finishes, the links between pages are adjusted to work correctly.

You'll also have to locate an ISP or Web hosting provider to handle your Web site. Things you want to consider when evaluating a Web host include the ability to take credit-card purchases and handle RealAudio feeds.

I recently set up a site at www.networkref.com using HostAmerica (www.hostamerica.com) to host my site. The registration process involved setting up a domain name (\$70 for the first two years, \$35 per year thereafter), a \$49 setup fee and three months of access (check rates to see what type of plan works best for you).

Peering: The inner workings of service providers

By Jim Winkleman

As a corporate network manager, how much do you need to know about the inner workings of the Internet — or about the business plans of the service providers that connect your corporate LAN or Web site to the rest of the world?

With the rapid evolution of the Internet's technical and business infrastructure, the answer is "plenty." How your

— the network access points (NAP) and the metropolitan-area exchanges (MAE) — through a free exchange relationship called bilateral public peering. Today, these public exchange points are plagued with congestion problems.

Two connectivity alternatives are emerging: private peering among the largest backbone providers and, more recently, private transit connections to

the major providers, the destination of most of the traffic, frequently run at or near capacity. As more routers announce more destinations to each other, the constant chatter causes routing instability.

In addition to these growing technical problems, the viability of a public peering strategy is under threat due to the withdrawal of free peering agreements by the Big Five backbone

Private peering has solved the packet loss problem for the top Internet backbone providers.

Private transit

So with the largest providers peering privately among themselves and with no end in sight to the problems at the public exchanges, where does that leave the rest of the providers? Some, such as companies that provide specialized Web hosting services, have high connectivity requirements for their customized services.

Many of these providers are adopting a new technology, called private transit, with the goal of keeping customer traffic from traversing the public IXPs.

Private transit is achieved by direct connections to multiple major backbone providers. These are contractual, commercial *transit* connections.

In addition to eliminating packet loss, private transit has two additional benefits. A transit provider accepts traffic for every destination on the Internet, while peers only accept traffic destined for their own network. And providers with multiple private transit connections still have connectivity even when there's an outage at a major backbone provider.

Another alternative

Using technology similar to private transit, a group of service providers — Savvis Communications Corp., Williams Communications, Exodus Communications, Inc. and Electric Lightwave, Inc. — have founded the Brokered Private Peering Group. The group wants to establish six ATM-based peering points around the U.S. The group's main goal, like other private peering plans, is to revamp the way providers exchange traffic and provide more reliable Internet services.

Winkleman is the chief technology officer at NaviSite Corp., an ISP. He can be reached at (888) 298-8222.

UP CLOSE Peering methods

Historically, Internet providers exchanged traffic at IXPs — the NAPs and MAEs — through a relationship called bilateral public peering. Today, these public exchange points are plagued with congestion problems. Two alternative strategies are emerging: private peering among the largest backbone providers and, more recently, private transit connections to multiple providers. The latter is favored by specialized ISPs.

Internet bandwidth provider or Web site outsourcing service connects to the Internet will affect the performance and availability you're paying for.

As the Internet becomes increasingly popular, two trends are working in opposition to each other. Corporations are deploying more Internet-based business-critical applications, but this increased Internet usage is placing more strain on the Internet infrastructure. The effect of this strain can be seen clearly at the public Internet exchange points (IXP), where most providers exchange traffic, but where no provider has control over quality.

Historically, Internet providers exchanged traffic at IXPs

multiple backbone providers, which are favored by specialized ISPs.

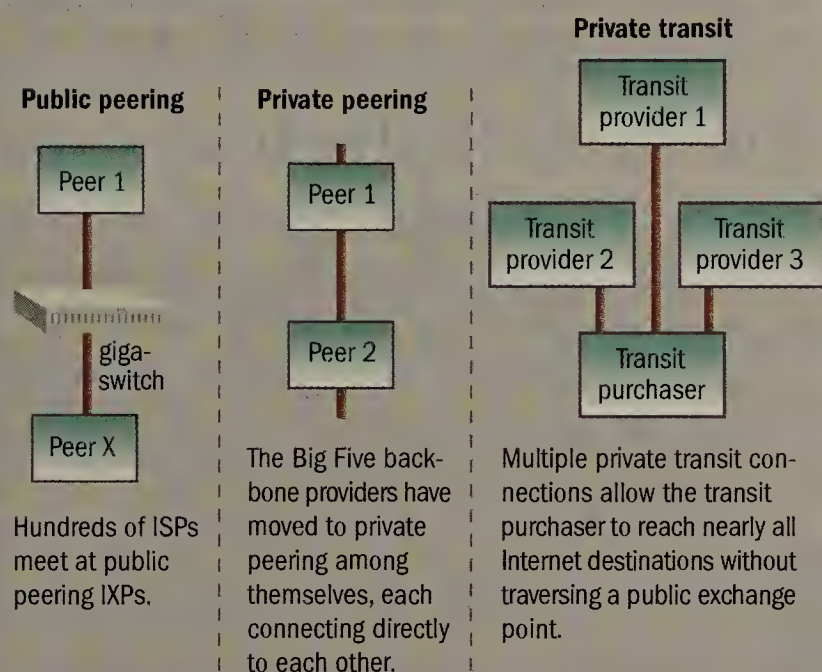
Public peering

Public peering is the oldest and most problematic strategy for exchanging Internet traffic. The number of ISPs that connected to IXPs with a DS-3 link and acquired many peering agreements grew rapidly in the mid-1990s. This growth brought capacity problems to many IXPs.

Specifically, packet loss is increasing at the IXPs for the following reasons:

The shared media — gigaswitches, Ethernet LANs or FDDI rings — are subject to degradation in performance as they approach saturation.

The circuits connecting to

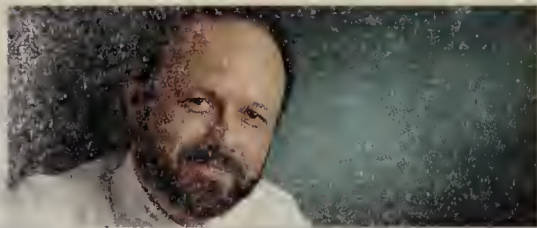


providers — MCI Communications Corp.; WorldCom, Inc.'s UUNET Technologies, Inc. and ANS Communications Corp.; Sprint Corp.'s SprintLink and GTE Corp.'s BBN.

Private peering

In a vote of no confidence for public peering, the Big Five providers implemented private peering among themselves in 1995 and 1996. No longer exchanging traffic among themselves at the IXPs, each has implemented four or more private interconnections with each of the others.

These private peering sessions are direct connections from one peer to the other, in contrast to public peering over a shared medium at the IXPs.



Has merger mania benefited telco customers? Not in Bell Atlantic's region

When SBC announced it would buy Ameritech I realized I hadn't heard from customers affected by telecom merger mania. So I asked readers in the newly joined NYNEX/Bell Atlantic region how they are faring.

Based on feedback I've gotten, the NYNEX/BA deal has proven to be a real dud for users — something regulators ought to reflect on as they weigh the proposed SBC/Ameritech pairing.

I asked four questions, and the answers — most of which you can find in our special conference on Network World Fusion (www.nwfusion.com) — weren't very heartening.

1. Has customer service improved? Here's where Bell Atlantic fared best, but that's not saying much. A handful of customers said service has gotten better, but most readers said service hasn't changed. "If any company provided the level of service in the open industry as [BA does, it] would be out of business the next day. We need the full onslaught of competition," wrote one.

2. Are you paying less for service? No luck here. If operational savings have resulted from the merger, readers don't think they're seeing any benefit. "The merger was a way for this corporation to streamline costs and maximize profits. If it were otherwise, where is the proof?" asked one reader.

3. Is the merged company more innovative? A resounding no. Customers aren't seeing new services or billing options, and the frustration is almost palpable. "BA can't spell 'innovation.' They still think ISDN should be the answer to everybody's prayers. BA has no [asymmetric digital subscriber line] plans. BA can't send me my phone bill electronically," said one.

4. I asked whether the merger had made life easier. The answer was no. One customer wrote: "I see no need for any Baby Bell to merge or be allowed to merge until there is true local competition."

SBC says its merger with Ameritech will provide loads of customer benefits and prepare the company to compete in other RBOC regions. But Bell Atlantic's actions and the reactions of its customers shed doubts on those claims. If regulators are going to allow SBC to complete the Ameritech merger, they should use the opportunity to force SBC into opening up its local loop to competitors. If local public utility commissions and the FCC had pushed BA harder, the answers to my questions could have been different.

If you're a Bell Atlantic or SBC/Pac-Bell customer, I'd still like to hear your views. I'll forward all of the comments to the FCC.

John Gallant, editor in chief

jgallant@nww.com

I n t r a n e t a d v i s o r • D a n i e l B l u m

Act now to avoid the Year 2000 e-mail lockdown

Will your e-mail network grind to a halt on Jan. 1, 2000? If you're running older systems such as cc:Mail, Microsoft Mail, IBM OfficeVision or Digital's All-in-1, it just might.

There are many things that could go wrong with your e-mail network, even if you're running a Year 2000-compliant e-mail system. E-mail may not function correctly if neighboring messaging systems or backbones, the network itself, applications submitting messages or the platforms on which the network depends start to misbehave. In a complex messaging network with multiple post offices, switches, gateways and directory synchronization servers, problems in one component have a nasty habit of propagating to others.

Woe unto the user whose system is not Year 2000 compliant, for e-mail has many date-sensitive processes. Confronted with Year 2000 dates, the system may incorrectly sort messages in folders or discussion databases. Your calendar could go berserk. New messages may be autodeleted, items may be rejected, and logs and utilities may become unusable. Users may find themselves unable to reply to messages through a gateway. Directory synchronization processes could fail.

So what should you do?

To remedy your Year 2000 problems, you must first take inventory of your e-mail systems, gateways, management utilities and applications. You may find this to be a frustrating experience because some Year 2000 risks are known but many are not.

For example, the Lotus Web page says earlier versions of cc:Mail are not Year 2000 compliant but points the user to cc:Mail Post Office DB8 and cc:Mail client R6.3, which contain maintenance fixes to solve the problem.

In other cases, the risk level is uncertain. The Lotus Soft-Switch backbone product pages do not reference Year 2000 compliance. Microsoft's Year 2000 page says Exchange 5.5 is compliant, but the page is silent about Microsoft Mail and previous versions of Exchange. (See www.microsoft.com/ithome/topics/year2k/y2kcomply/y2kcomply.htm.) When contacted, a Microsoft represen-

tative said, "Test results will be published by the end of the summer." To my knowledge, no Microsoft Mail fixes are planned.

Considering some enterprises plan to freeze changes to their network from about April 1999 to April 2000, users don't have too much time to act if upgrades are needed. But an upgrade is what you'll face in the many cases where no maintenance releases are available.

Novell GroupWise is one example. Novell has a Web page that identifies whether each product component is compliant. (See <http://www.novell.com/groupwise/y2000/>.) But all too often, you'll see the notation "Not being tested — Upgrade to GW 5.2."

Vendors need to be more proactive about providing users with maintenance releases or, at the very least, with more information about what can go wrong if they don't upgrade. Picture yourself going hat in hand to your CIO: "I need \$500,000 to upgrade to Exchange 5.5 or GroupWise 5.2 because of Year 2000 problems." "What problems?" "Uh... I don't know." This is not exactly a career-enhancing dialogue.

The industry as a whole must be more proactive. The Electronic Messaging Association, for example, is considering a Challenge 99 demonstration dealing with secure messaging and the interoperability of certificate authorities.

But for many users, the real challenge may be making the business case to management that a big messaging upgrade is needed before the Year 2000 lockdown begins.

Blum is a principal at Rapport Communication, a consultancy that focuses on intranet messaging, directories and groupware. He can be reached at dblum@mindspring.com or www.rapport.com.



Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

For and against Microsoft

Regarding your editorial about the states' antitrust action against Microsoft being, like the Department of Justice action, too late ("Let bygones be bygones," May 11, page 44):

I just don't get it. Why can't some people see that Microsoft abused the monopoly it has on desktop PCs?

Microsoft used its monopoly of the desktop as a conduit to dump browser software on the PC market. This effectively devalues browser software to the point where businesses can't make a living producing browser software.

The truth about voice over IP

Carriers make over \$200 billion annually worldwide on voice communications. Despite claims that data traffic is exceeding voice traffic, voice revenue is what's driving the carrier market. Naturally, the data vendors want a piece, so there's a popular trend to link voice with the Internet.

But do users believe in voice over IP? Will it work technically? Is the regulatory environment favorable? What will happen to the Internet if voice over IP succeeds?

In a survey of 267 companies of all sizes I completed last October, respondents didn't see the need for voice over IP to augment or replace basic local, long-distance or internal telephony. Over 95% of the respondents had no plans to replace general domestic voice calling with voice over IP. A mere 9% were interested in voice over IP for purely intracompany tie-line voice. Even for international calling applications, where voice costs are high, only 19% of respondents said they would consider voice over IP. Straw polls I conducted at seminars on the East and West Coasts within the past month confirmed this view.

The reason companies most often give for their lack of interest in voice over IP is the savings vs. degradation issue. Most large companies already have voice rates below 7 cents per minute and believe competitive pressure will bring prices down further. Nearly all believe that the benefits of voice over IP will be insufficient to justify the speech quality problems.

Research on voice over the Internet has shown callers can expect round-trip delays of 500 msec or more — double the delay of satellite. This delay is intrinsic to the Internet's structure, so the voice-over-IP players can't control it. In my October survey, delay-induced problems with speech topped the list of user complaints about voice over IP by a large margin; 77% reported delay unacceptable, while only 17% reported problems with packet loss or compression-induced distortion.

Even if voice over IP worked, would voice over the Internet be effective? The truth is that most voice-over-IP applications depend on the concept of unlimited-usage pricing of IP service. Traditional dial-up voice services are charged by the minute and sometimes are also based on distance. Internet voice traffic usually falls under the monthly fixed rate, so ISPs have to handle more traffic with IP voice without reaping more revenue. Enough IP voice and the ISPs would lose money.

We might want to consider support costs when we assess how earnestly carriers would promote voice over IP, based on recent voice-over-frame relay experiences. Many carriers have quietly begun to ignore requests for proposal for voice over frame relay. The reason, according to one carrier, is customer support costs are eight times that for frame relay data because of customer complaints about voice

quality. Support costs for voice over IP probably would be even higher.

Even if the ISPs could make money on voice over IP, regulatory issues loom. The Federal Communications Commission has indicated it will, in some cases, impose access charges on ISPs to fund the universal service pool. Because that pool is targeted at subsidizing voice service, it's clear ISP entry into the voice market is one of the cases that would likely induce FCC intervention. In other countries, where voice services are the monopoly of a national carrier, large-scale voice traffic migration to the Internet would surely result in an order to cease transport of voice traffic.

That might be a good thing for everyone on the Internet, because there's reason to believe that the success of voice over IP could literally shut the Internet down. In the late 1980s, the Internet suffered a series of congestion collapses that arose from the way TCP flow control and error recovery handled network faults. The introduction of the "slow start" feature was designed to correct this problem; it is now included in all TCP implementations. But voice over IP can't tolerate the delay induced by slow start, so it doesn't use TCP. If voice-over-IP traffic on the Internet grew substantially, a large part of Internet traffic would be operating without slow-start flow regulation, and the Internet could be driven to the same kind of collapses we had in the 1980s.

So what's the truth about voice over IP? First, users are almost universally doubtful about its potential in any form. Second, there are a host of technical, business and regulatory reasons why it probably can't be broadly useful on the Internet.

What about private networks or new carriers such as Qwest Communications? Could voice over IP be more efficient in that context, where presumably delay and quality of service could be controlled? Perhaps. Compressed voice requires less bandwidth than standard voice — as much as 85% less. Couldn't that cut costs by 85%?

Not according to financial analysts, who point out that the cost of bandwidth is only about 10% of total long-distance telephony cost. The rest is switching, customer service and support, and other expenses.

Voice over IP is useful for Internet call centers, collaboration between Microsoft NetMeeting users and cell-phone partners trapped on expressways and other valuable but niche applications. In the past, when we've over-hyped a technology, we've succeeded in killing even its legitimate uses. Let's be honest with ourselves and give voice over IP a chance where it's real.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (609) 753-0004 or tnolle@cimicorp.com.



Microsoft doesn't have to worry about this, though; it gets its primary revenue from operating system sales and can afford to subsidize a "free" browser. Then Microsoft decides to call the browser part of the OS in order to hide its true cost. You might think you're getting a free browser, but you're paying for it with every new PC you purchase and with every OS upgrade.

As for the Department of Justice having a say in what direction the computer industry should take, I'm all for it. I certainly do not want to live in a world where Microsoft calls all the shots for the industry. The DOJ may not be [composed of] software experts, but at least it is trying to hold the door open so other voices can be heard.

Microsoft could have avoided this whole mess. It didn't have to choose the techniques it used. Instead, it got greedy. *George Ninceheler*
President

Nishnabotna Bend Technologies
Austin, Texas

Microsoft should not be punished for being successful and competitive. Let the free market decide what is best for users, not the government. If someone has a better idea for an OS, let him step forward. The truth is, Windows is what most people want and prefer. Forcing added competition into the marketplace will have a detrimental effect on the computer industry and the economy.

Let us have our Windows the way that we want it. We can show Bill Gates what we like and dislike with our purchasing power.

J. Alan Gingrich
Senior computer systems specialist
ManTech Mission Support &
Automation Team
Heidelberg, Germany

All you hear about publicly from Microsoft is "innovation" and "new products." But

according to the internal memos that the DOJ has, Microsoft talks about leveraging Windows to increase Internet Explorer share. What is to stop Microsoft from doing the same with its applications?

The DOJ should dictate a complete separation between the OS and application pieces of Microsoft.

Greg Nyce
Washington, D.C.

This case should simply revolve around whether Microsoft uses monopolistic, anticompetitive practices that are illegal under antitrust law. If Microsoft does, it has to stop. If Microsoft doesn't, then more power to it for succeeding fairly (or at least legally).

What concerns me is that Microsoft loyalists seem to feel that it's OK for Microsoft to do whatever it wants, regardless of legality. The Windows 98 delay is a short-term event, but a loss of choice would haunt us all for a long time to come.

Darrell Piatt
Dallas

If the DOJ wants to dictate how the two leading Web browsers, Netscape [Navigator] and [Microsoft] Internet Explorer, are obtained by con-

sumers, I have a suggestion: Since both browsers now are free, force Microsoft and Netscape to make an open, unbranded standard browser for everyone to use. *Daniel Kalusz*
San Antonio, Texas

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Continued from page 1

The number of devices that could be attached to a network is impressive: stand-alone office equipment such as photocopiers; input devices such as cameras and microphones; road warrior gear including handheld PCs, cell phones and pagers; transaction-oriented devices, from vending machines to card readers; environmental sensors such as thermostats and pressure gauges; building systems such as lighting monitors and door locks; and consumer electronics devices including toys, set-top boxes and game consoles.

The bottom line is networks are extending their reach ever farther. This poses some obvious problems, including heavier traffic, burgeoning management data and new types of security threats. But the coming world of net-attached devices also harbors opportunities.

Networks are strategic because they facilitate information sharing. The coming boom of net-enabled devices will expand that mission to include real-time information about inventory, resource consumption, maintenance status and human traffic patterns. This information will translate directly into more efficient use of resources and personnel, and facilitate just-in-time processes. The question is, will you be overwhelmed by the burden of integrating all these devices before you can tap this wealth of data?

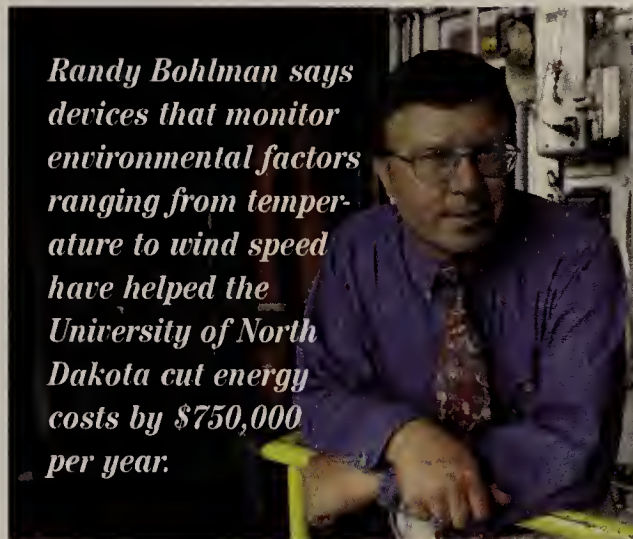
One of the main benefits motivating companies to integrate devices into their networks is cost recovery, according to John Gage, chief scientist at Sun Microsystems, Inc.'s Sun Labs in Mountain View, Calif. Every device that consumes or dispenses something, whether it's toner or a soft drink, requires human beings to replenish its supply. Attaching those devices to the network makes it possible to see in real time exactly what device needs resupplying and when. This allows companies to manage costly personnel time more effectively.

"I think the future of networking is the future of efficiencies," Gage says.

The physical plant department at the University of North Dakota in Grand Forks has devices that measure temperature, pressure, wind speed, wind direction and carbon monox-

ide levels all around the campus. The data is transported over the campuswide NetWare network to building management and environmental control applications running on a Windows NT server (see graphic, below).

Randy Bohlman says devices that monitor environmental factors ranging from temperature to wind speed have helped the University of North Dakota cut energy costs by \$750,000 per year.



In this fashion, the university's boiler management system, in effect, can communicate with its air-conditioning system, says Randy Bohlman, technology advancement coordinator for the department. Gone are the days when the boiler could kick in on a cool September morning causing the air conditioner to work harder. Likewise, the university now has no problem keeping a specific room cool, such as a data center, while surrounding rooms are comfortably warm.

By integrating its boiler management system with its environmental control system, the university has been able to save 25% of its energy costs, or about \$750,000 annually, Bohlman says.

"We crunch numbers [coming from environmental sensors] in different algorithms for energy savings, and then the results of this work go out to the individual controllers," Bohlman says. "We can economically make these interconnects [using the network] where they [would otherwise] cost hundreds of thousands of dollars."

Users are able to access environmental data from any workstation on campus and can easily pull it into spreadsheets to generate reports. This accounts for significant labor savings,

Bohlman adds.

The university achieves additional labor savings because "we're using a lot of neural intelligence within our building management and control network," Bohlman says. The environmental control system "tunes itself. It automatically begins to compensate and correct for alterations in the various systems," he says. For example, the system recalibrates itself when a new sensor comes online.

There is potential for cost savings in network systems as mundane as lighting. The British Columbia Institute of Technology in Vancouver saves 20% to 30% on lighting costs through a combination of sensors that feed a centralized control system, says Gil Moore, physical plant support services manager. Sensors determine how much natural light is in a room, and the control system adjusts the level of electric light accordingly. Similarly, there are sensors that can determine when nobody is in a room, prompting the control system to shut off the lights. The institute also has granular control over the level of light in different rooms so, for example, it can ensure there's always ample light in a conference room. And all this is supported over the school's campus data network.

Teaching devices to talk

Beyond the monitoring and rudimentary control capabilities of SNMP, software technologies are emerging that help enable this communication with various devices. The technologies include Sun's Java variants, Hewlett-Packard Co.'s JetSend and Lucent Technologies, Inc.'s Inferno.

From the Java camp, there's Java Card, which lets developers write applets that run on smart cards. Embedded Java applications run on real-time operating systems on 8- to 32-bit embedded processors. Personal Java is aimed at devices such as handheld PCs and set-top boxes.

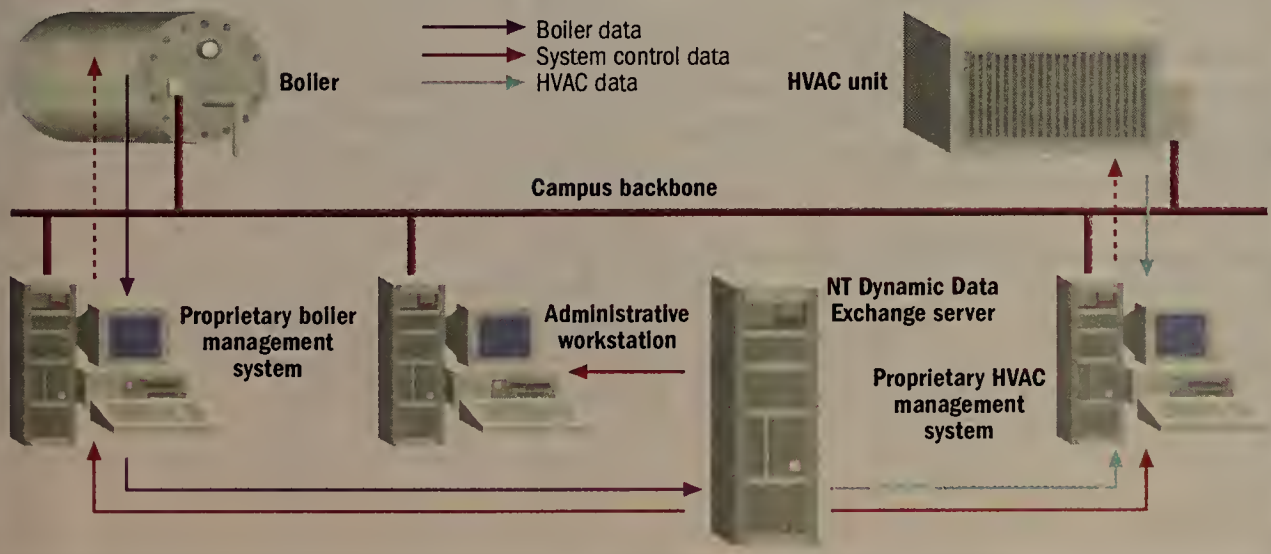
HP's JetSend is a communications protocol intended to work over any transport and on any device. It classifies devices ranging from PCs to digital cameras as "senders" and "receivers" and allows them to communicate without knowing the properties of the other device, according to Jim Hammons, HP's Alliance Programs manager.

The software allows two devices — for instance, a digital camera in New York and a photocopier in Los Angeles — to talk to each other over a network, with no computer or additional software required. Similar to the way modems negotiate data rates, JetSend negotiates the best common information format among devices such as fax machines, personal digital assistants (PDA), photocopiers, digital cameras, scanners and smart cards. JetSend is designed for embedded systems, operating in as little as 200K for IP devices and 50K for devices using simpler transports such as infrared, Hammons says.

New York brokerage house Bear, Stearns & Company, Inc. is testing JetSend for use in its IP- and Windows NT-based network, according to an associate director for the company, who asked not to be identified. Bear, Stearns is looking for JetSend to ease the integration of network-attached devices such as scanners and plans to extend use of the technology to PDAs and eventually even photocopiers, he says.

UNIVERSITY USES EMBEDDED SYSTEMS TO CUT ENERGY COSTS

At the University of North Dakota, boilers and HVAC systems feed data to a Windows NT-based Dynamic Data Exchange server, which coordinates control of the systems. The strategy has cut the school's energy costs 25% by improving control over the systems and cutting waste.



"Using the copier scenario, if I wanted to copy a 30-page document to 10 people in different countries using the Internet or [the] intranet that we have in place, I could do that with JetSend," the associate director says, noting it would be considerably less expensive than faxing the document. Additionally, there's no computer involved in the process, only copiers.

"It's a great technology because it doesn't tie you to the domain model, and it doesn't work under the domain constraints of NT," he says.

Lucent's Inferno is an operating environment encompassing a virtual machine, virtual operating system and virtual network. Inferno functions as an operating system in embedded devices, taking up as little as 1M byte of space. It also functions as an application on top of Windows 95, NT and various flavors of Unix.

Inferno uses a platform- and transport-independent file system in which everything, including devices, looks like files, according to Ron DeLange, vice president of Lucent's Inferno network development group. As a result, he says, Inferno can treat entire classes of devices as single entities, easing software upgrades, for example.

Fuzzy logic controllers, used in many consumer electronics products, are also poised to ease the integration of simple devices such as sensors. Fuzzy logic controllers could reduce the amount of raw data sent over the network because they can be set to evaluate multiple cri-

More online:

Learn more about the enabling technologies behind embedded systems, including Inferno, Java, JetSend and Windows CE, from the vendors that created them.

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reap the most benefits — is in processing the data itself.

Adding more devices to your network will increase the need for higher level enterprise management systems such as Computer Associates International, Inc.'s Unicenter TNG Framework and Tivoli Systems, Inc.'s Tivoli Management Environment, according to Stephen Foote, vice president of research strategy for Hurwitz Consulting in Framingham, Mass.

"Think of it as wounded soldiers coming in off the battlefield," he says. "You've got so many of them, you have no idea which ones need attention first. [Network managers] can't be expected to fully understand the behavior of all these different types of devices, so you need some form of heuristics to tell you when things are going wrong."

For many users, however, the heterogeneous network management systems they already have will be up to the task, according to Amy Wohl, president of Wohl Associates, a market research

ger false fire alarms and disable smoke detectors. The illicit task of crashing a company's computers becomes easier when all a hacker has to do is turn off the air conditioning in the computer room. Hackers or competitors could also glean information from device-generated data sent over the Internet to outsourcers and suppliers.

"Network managers have to . . . improve the way in which they manage these devices over and above the default SNMP, because SNMP is downright miserable when it comes to security," Foote says.

He recommends a four-step approach to security:

- Compartmentalize the network with internal firewalls between business areas, departments or geographic areas.
- Audit for use of modems on the network to locate back doors.
- Establish an intrusion detection scheme by monitoring network traffic.
- Authenticate management access to devices.

More bandwidth, and crank the AC

If everything that runs on electricity is potentially a network device, many companies will need to reconsider how they are organized. As buildings become intelligent, the distinctions between the information and physical infrastructures blur.

"The network manager is going to be monitoring . . . all of these things which now seem to be somebody else's purview," Sun Labs' Gage says. "The first thing [businesses] need to do is break down the barriers in the company that separate the computer networking people from the facilities management people."

However, it's important to keep clear the distinction between automating a process and assigning responsibility for the process.

"I don't think IT wants to be responsible for everything," says Heather Ashton, Internet business strategies analyst for Hurwitz Consulting. "[The boom of net devices] has the potential for being a nightmare for IT."

The best approach to integrating facilities management, at least in the short run, is for IT to treat the facilities department as a "customer" of the network, just like any other department. The facilities department uses the corporate data network to access devices, while the network manager accounts for the added traffic in load balancing and planning. This approach will also put the net manager in position to adapt to the continuing evolution of networks. Beyond expanding the reach of networks, the coming wave of net-attached devices will change the very nature of corporate networks. Intranets are helping to flatten organizations, and extranets, in a sense, are turning companies inside out. Next, net-attached devices will start to dissolve the boundaries of corporate networks altogether, Gage says.

"My bet is network managers never think that every vehicle driven by every employee of their company is part of their network," he says. "But it is, and so is every home."

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NETWORK DEVICE ENABLING SOFTWARE

Product	Company	Size (bytes)	Description
Inferno	Lucent	1M	An operating system that allows entire categories of network devices to appear and be controlled as a single entity
Java	Sun	512K	An application development environment that allows developers to write and run applications on a range of platforms, including embedded systems
JetSend	Hewlett-Packard	50K to 200K	A protocol that allows net devices to communicate with one another, without using a computer as an intermediary
Windows CE	Microsoft	2M	Modular operating system for handheld PCs and consumer electronics

teria, says Bruce Watson, marketing manager of National Semiconductor Corp.'s LAN division in Atlanta. For example, an outdoor heat sensor could avoid triggering an alarm even though a threshold has been passed because it recognizes that it's 2 p.m. and it's July, he says.

Infrastructure challenges

Before deploying any of these technologies, you need to ensure your network infrastructure is up to the integration task.

Bandwidth is an obvious concern. Though adding a multitude of devices to the net will increase network traffic, the size of the increase is not so obvious. After all, not every light fixture and heat sensor will need to be a full-fledged IP node. And few devices are likely to generate as much traffic as a typical end user. Some devices will send a steady stream of audio or video data, but most will likely send only occasional status reports that could be as simple as "It's dark" or "It's cold."

Where network managers will likely feel the most pain from integrating network-attached devices — and where corporations will likely

firm in Norberth, Pa.

"It's more of the same," she says, noting only new management applications will be required.

And not all the management traffic generated by network-attached devices will be of concern to network managers. Fortunately, they will be able to use emerging technologies to alleviate some of their burden.

For example, instead of using an SNMP trap to have a copier issue an alert about its status, a net manager could configure JetSend to e-mail or page someone, the Bear, Stearns associate director says. Many of the new devices will also be easier to work with because they will be able to configure themselves when they're added to the network.

"More devices, but more intelligent devices," he says. "That's the difference."

Added risks

In the era of network attached-devices, security, as always, is an issue.

With the absence of adequate security measures, hackers would be able to disrupt power, turn off or change environmental controls, trig-

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SEAGATE'S NERVECENTER CORRELATION AND FILTERING ENGINE WILL LET YOU BREATHE A LITTLE EASIER.

Nervous about net meltdowns?

By Bob Currier

Friday afternoon, 4:53 p.m. One of your core routers has just contracted a severe case of the overloads. Your management console is starting to light up like a Las Vegas hotel. And you thought you were going to leave on time for once.

Sound familiar?

Don't despair. With NerveCenter Version 3.0, Seagate Software offers you relief. NerveCenter is an event management application that uses behavior models to correlate network conditions, identify critical problem areas and reduce the amount of redundant information a network manager must deal with. The product might not be able to keep your network from melting down on a Friday afternoon, but you'll spend less time chasing spurious alarms and trying to correlate events.

NerveCenter is a useful tool for managing large groups of disparate systems. The software

Unix systems. NerveCenter can be installed on a single console for centralized network management or deployed on several distributed consoles.

The NerveCenter server manages NerveCenter's database, which contains all poll, mask, alarm and property group definitions, along with detailed information on all nodes being modeled. The server communicates with the network management platform (if you're using one), monitors network events and passes updates to the NerveCenter client.

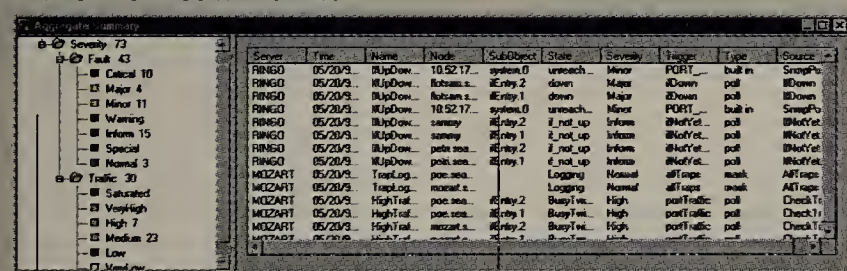
The client provides the network administrator with a graphical front end to the NerveCenter server displays. With it, you can aggregate summaries and alarm histories and build the behavior models that are the heart of NerveCenter.

Behavior models are used to specify the relationship between events occurring in the network and corrective actions that need to take place. The models are graphically represented in flowchart fashion, making complex behavior patterns easy to understand.

Distributed consoles provide one of NerveCenter's best features. Seagate classifies remote sites as "lights-on" or "lights-off." Lights-on sites typically have a full-time network manager capable of responding to NerveCenter notifications. Lights-off locations are smaller or less-critical sites that can't justify a permanent support person but still require 24-hour network uptime.

We think the remote console idea is a good one, but we found Seagate's implementation a lit-

NETWORK STATUS AT A GLANCE



In NerveCenter's Aggregate Summary window, the left panel shows a summary of current network conditions.

The right panel contains the alarm-detail pane, with all details of active alarms.

comes with such a large collection of predefined behavior models that you may never need to roll your own. Should the need arise, however, all the tools required for complex model definitions are provided. But be warned: This is a powerful package and requires a significant investment of time to master.

Based on a client/server architecture, NerveCenter provides correlation across network devices such as routers and bridges, Windows NT and

Net Results

NerveCenter 3.0
 Seagate Software
 (800) 327-2232
www.seagatesoftware.com/nervecenter
 Ranges from \$2,195 for one server and 10 nodes to \$24,995 for one server and unlimited nodes

PROS

- ▲ Rich MIB library
- ▲ Good collection of behavior models
- ▲ Drag-and-drop development

CONS

- ▼ Doesn't support Cabletron's Spectrum management platform
- ▼ Steep learning curve
- ▼ Documentation not consistent

tle confusing. While you can monitor as many servers as you need to, you may only connect to one at a time. Normally, this wouldn't be an issue: NerveCenter is capable of many different forms of notification, and if a problem occurred at a lights-off site, the central console would immediately be contacted. The problem arises during configuration. If you define a large number of custom behavior models, defining specific devices or attributes, Seagate doesn't give you an easy way to distribute them to multiple servers. While you can export and import object and behavior definitions, you must copy the files to each server on an individual basis and import them. In an environment with multiple servers this would be tedious at best and could easily lead to out-of-sync databases.

Clean screen

NerveCenter's main screen is based on a minimalist approach: less is more. When you bring up the application, you must first select a server from a pull-down list or by typing in a valid name. You are prompted for a user ID and password. Upon successful connection to a server, all commands and toolbar buttons become available, and you are presented with the Aggregate Summary window (see graphic, left).

From this window, you can monitor fault conditions and traffic levels. Colored boxes on the screen indicate severity levels. Active alarms are shown as numbers next to the severity-level indications. Double-clicking on an alarm opens an Alarm History window, which displays a state diagram and transition history for the alarm.

We really liked this approach. Many of the network management packages we've used take a more-is-better tack and can easily overwhelm you with too many screens. NerveCenter gives you

Score Card

	Administration (25%)	Notification (25%)	Installation and configuration (25%)	Stability (15%)	Documentation (10%)	Total
NerveCenter 3.0	7 x .25 = 1.75	8 x .25 = 2.00	7 x .25 = 1.75	9 x .15 = 1.35	5 x .10 = 0.50	7.35
Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.						

everything you need to know in one screen. It's clean, simple to use and, after a little practice, becomes second nature.

You can populate a database with NerveCenter by one of two methods. Smaller networks can be modeled by hand. For each node you want NerveCenter to manage, you specify an

IP address, read/write community name string and property group. This is a time-consuming task, so if you plan to monitor more than 50 or so nodes, we recommend you use NerveCenter's ability to import node information from Hewlett-Packard Co.'s OpenView, Tivoli Systems, Inc.'s TME, Computer Associates Interna-

tional, Inc.'s Unicenter or IBM's NetView for AIX. One surprising omission from this list of supported packages is Cabletron Systems, Inc.'s Spectrum.

Seagate provides a list of more than 75 SNMP Management Information Bases (MIB). However, not all of the supplied MIBs come compiled into the MIB data-

base file. While adding a new MIB isn't difficult, it isn't obvious that these files aren't already compiled. That information is buried in the back of the Administrator's Guide.

Installation and documentation

Installation of NerveCenter is a snap. Seagate says the server and client require Windows NT 4.0 with Service Pack 3 running on a 166-MHz Pentium with 32M bytes of RAM and 40M bytes of disk space. While we didn't find NerveCenter to be a significant consumer of CPU cycles, we wouldn't recommend installing it on anything less than a 200-MHz Pentium with 64M bytes of RAM.

We did run into one small hitch during the installation. NerveCenter requires that Microsoft Corp.'s SNMP services be installed on the server but doesn't test for their presence until the first time you fire it up. We would prefer that NerveCenter check for this during setup and warn the installer that a required service has not been activated.

The supplied documentation, while voluminous, needs work. While working through the Introductory Guide, we came across several references to chapters in other manuals. This required us to spend time looking up information in other manuals, which is distracting and time-consuming. Introductory manuals should include step-by-step instructions spelled out in detail. That notwithstanding, the Introductory Guide provided a solid tutorial in basic NerveCenter configuration and operation. The Introductory Guide is just that; there isn't an "Intermediate Guide," and the step from Introductory to Advanced is too big.

All in all, Seagate's NerveCenter 3.0 is a worthwhile product. It has a few quirks that we would like to see corrected, but it's a good addition to a network manager's tool kit. While it won't replace an experienced network administrator, it can certainly make for a more efficient one.

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- ☐ All of the above



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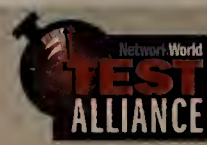
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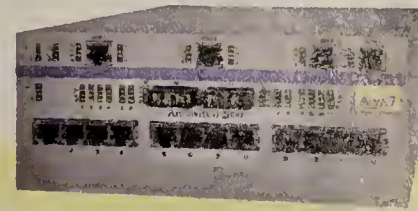
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Currier is also a member of the Network World Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.



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Scanning business cards beats data entry



I have many little boxes on my desk, all stuffed with business cards from people I've met. I also have an online contact database.

Unfortunately, the two don't intersect completely, and I don't have the budget to hire a data entry clerk just to update my database.

That's why I bought Corex Technol-

ogies Corp.'s CardScan Plus 300, a hardware/software combo that pledges to scan business cards, turn the information into text, decipher what areas on each card represent what contact information, and

store the card in an electronic Rolodex.

The scanner part of the product plugs into the parallel port of your PC, and your printer plugs into the back of the unit, so you can use both at once.

To scan cards, you feed them into the device one at a time. The product could be improved by the addition of an automatic card feeder and a catcher at the back for processed cards. The software can collect card images and process multiple cards when you tell it to.

If you have trouble, as I did on one PC, call Corex's technical support. I found they were prompt to pick up a call and knowledgeable in solving problems.

As a contact manager, CardScan is only fair. Corex

knows that most people already have contact databases, so its product lets you exchange data easily. You can export your entire CardScan database or a portion thereof to any of dozens of contact management pack-



Quick takes on high-tech toys by Test Center Director
Lee Schlesinger

ages. If you like more immediate gratification, you can transfer records one at a time as they're read in to all of the popular packages—a slightly shorter list than those you can export to.

I transferred my records to Symantec Corp.'s Act, Versions 3.0 and 4.0. Each transfer went smoothly, but until I upgraded the CardScan software to Version 3.0.7, CardScan failed to move the e-mail address information with the rest of the record. Even with the revised version, it put the e-mail address in the wrong field, requiring manual intervention, which slowed the process down considerably.

Still, I can live with that until the company releases Version 3.0.7B, which promises to fix the problem. I've been feeding a few cards per day into CardScan. I'm most of the way through the Bs now. At this rate, I'll be able to use the old paper business cards as confetti when New Year's Eve rolls around. That night, I'm going to party like it's 1999. ■

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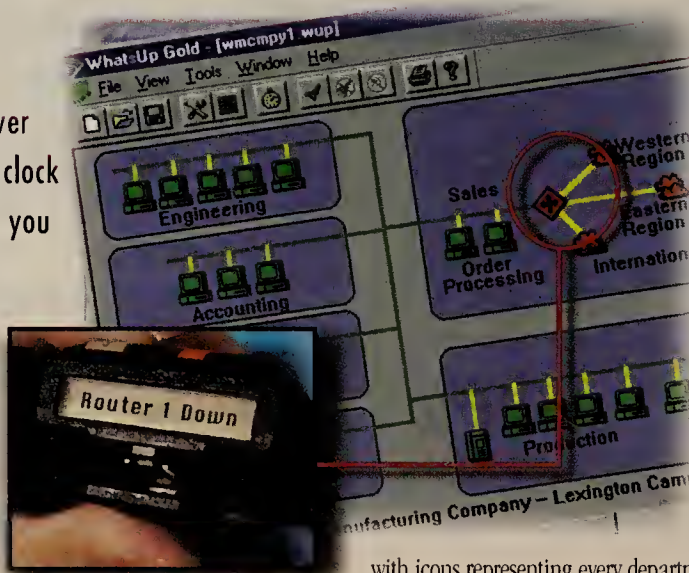


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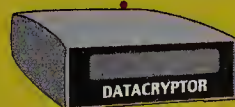
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Management Strategies

Volunteer for adventure

How IT workers are doing the right thing and putting their technical talent to use for good causes.

It's not like you're busy or anything — what with long hours at work, fussy end users and your kids vying for your attention at home. And that's not to mention your long commute. Who has time to think about volunteer work?

You do.

"Volunteering in America is so amazing.

It's a privilege," says Russian émigré Sasha Epstein, chief operating system architect for EPiCON, Inc., a Web application vendor in Waltham, Mass. "The possibilities are great."

Two weeks a year, Epstein volunteers at the Mount Washington Observatory weather tracking station in New Hampshire. This past January, the observatory staff tapped Epstein to install a wireless network to give an administrative office in North Conway, N.H., access to the observatory's files.

Even after Epstein leaves the summit, he lends support via telephone for such projects as installing a Windows NT Primary Domain Controller or checking to see if each PC's network configuration is correct. Epstein isn't the only IS professional donating time and talent.

"Volunteerism is on the increase," says Bob Goodwin, president and CEO of the Points of Light Foundation, a volunteer service and development center in Washington, D.C. "We are seeing an increase not only in numbers of people, but also a deepening of commitment and level of involvement."

Adults donated an estimated \$201.5 billion worth of wages in 1995. But it's the donated talent of technically skilled volunteers that may be priceless. "Many not-for-profits are technologically behind the times. If they don't catch up, they'll be left in the dust forever," says Sue Vineyard, managing partner at Vineyard-McCurley Systems, a community service and volunteerism consultancy and newsletter publisher in Downers Grove, Ill.

Lisa Prescutti agrees. "Nonprofits probably don't understand how much tech help they need," says Prescutti, director at BlueDot Software, an online trade show producer in San Francisco who shares her technical talent with the Berkeley Symphony. She reconfigured the symphony's network, trained staff to better use the network, and updated and increased the symphony's Web presence. Now workers can share resources and e-mail and gather statistics from the Web site. The symphony hopes Prescutti's improvements to its site

By Loretta W. Principe

will help attract a younger audience.

The symphony isn't the only winner here. Prescutti's volunteer work benefits her professionally, a theme echoed by many volunteers. "It's added color to my professional life. My CEO was

thrilled I was volunteering," Prescutti says. "I think employers like to see you involved in community. It's a character call."

And it's no surprise bosses give extra credit to employees doing good deeds. Sensitive companies of the '90s are heavily involved in community service projects, from sponsoring NetDay events to donating high-tech equipment to charitable organizations.

An IS manager at Mutual of Omaha Companies answered his employer's call for volunteers. Matt Oberst installed a small network at the Edmonson Youth Outreach Center in Omaha, Neb., using hardware his company donated. Through Mutual of Omaha's mentoring program, Oberst also works with the student responsible for the youth center's computers and networks.

Adding to your cache with your boss isn't the only benefit of volunteering. Just ask William Koester, service engineering manager with Digital Equipment Corp. in Stow, Mass. "Volunteering helped to keep me employed," he says.

Koester believes his volunteer work for a local technical high school and municipality was key to surviving layoffs at Digital. He helped install the school's network, implemented a high-tech curriculum and designed his town's Web site. "Keeping up and educated is critical. I [would have been] pushed out the door if I hadn't stayed current," he says.

While Epstein, Prescutti and Koester have taken different paths, they all started from the same point — their passions. Koester looked to his own life as a father and became involved with schools. Prescutti combined her love for technology and the arts. She's even begun working with a Web-based art gallery.

Even Epstein's choice to volunteer at the observatory was no accident. During his off time, the hard-core mountaineer suits up to explore what he describes as the "home of the world's worst weather." Winds on Mt. Washington average 100 mph, and the temperature is usually below zero in the winter. "There are windows of two or three hours when the wind is below 70 mph. In those conditions, I can hike," he says.

But not everyone has to climb a mountain to volunteer. There are opportunities — great and small — in your own backyard.

"If you're sitting on the fence, just try giving an hour every two weeks," Prescutti recommends. "You might like it."

Principe is a freelance writer and attorney in Springfield, Va. She can be reached at LWPrincipe@mailexcite.com.



Sasha Epstein's volunteer efforts ascend new heights at Mount Washington, N.H.

JUST DO IT

VM Systems' Vineyard shares tips for volunteering.

- ✓ Forget every notion you have about volunteering.
- ✓ Define what makes a good volunteer opportunity for you. Is it working with your family, a colleague or an assignment that's close to home?
- ✓ Follow your passion and find an organization with a mission you support.
- ✓ Interview the organization and look for signs of good management.
- ✓ Hit and run. Try a one-time assignment before committing.
- ✓ Assess your situation and only offer the time and energy you can afford.
- ✓ Try it once, then try it again.
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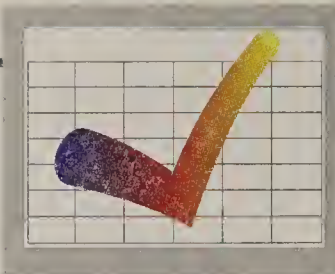


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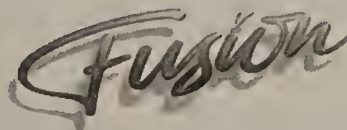
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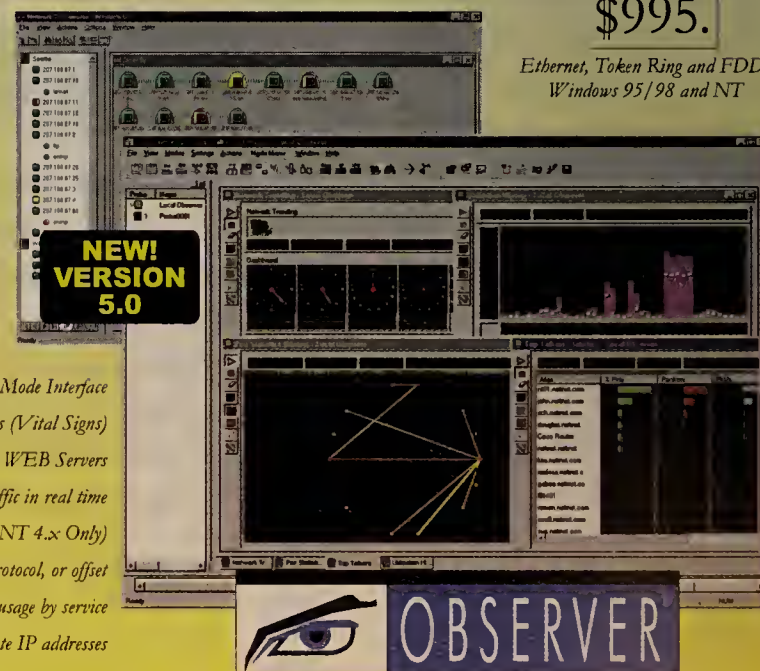
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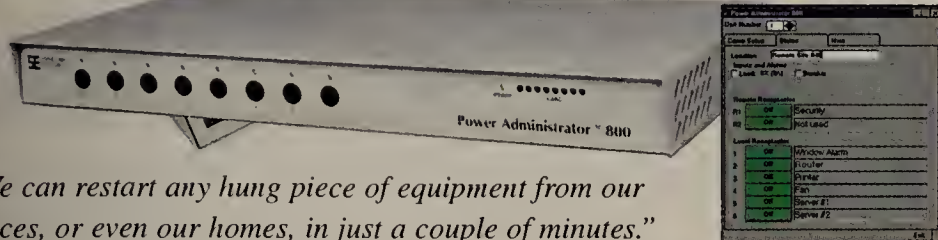
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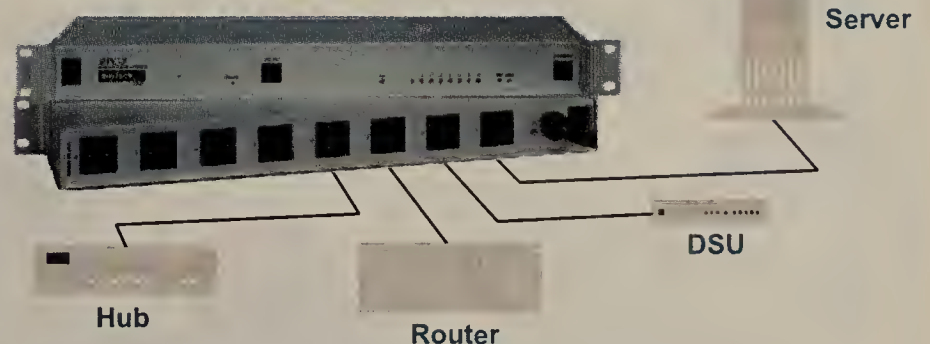
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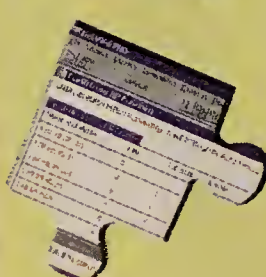
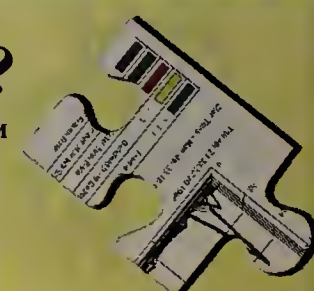
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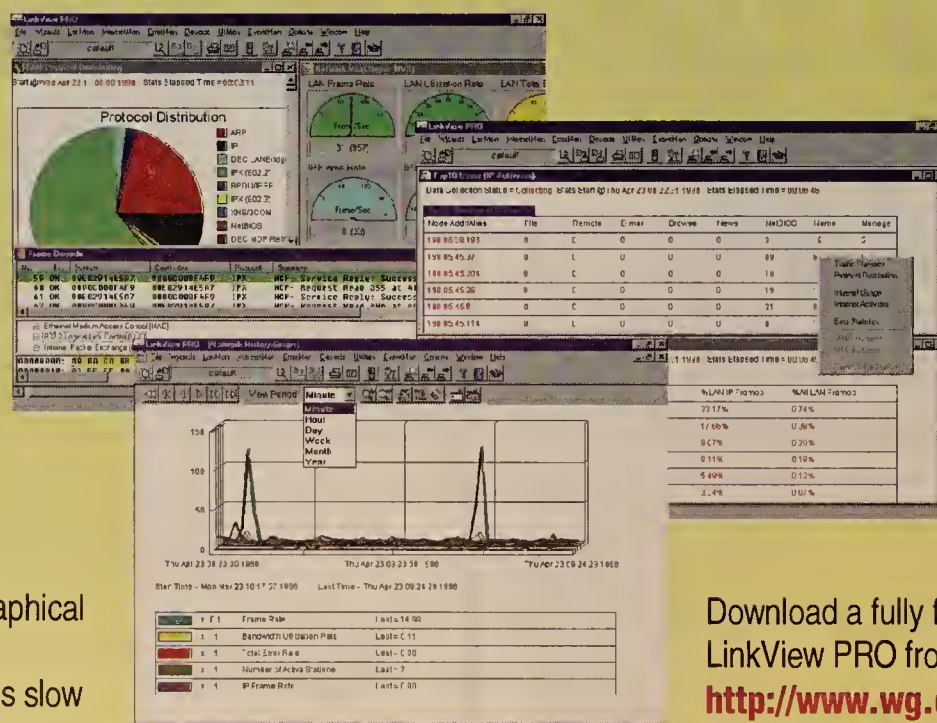
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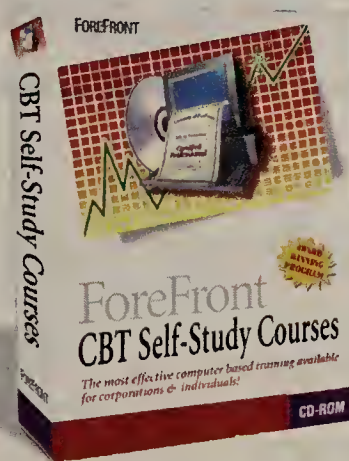
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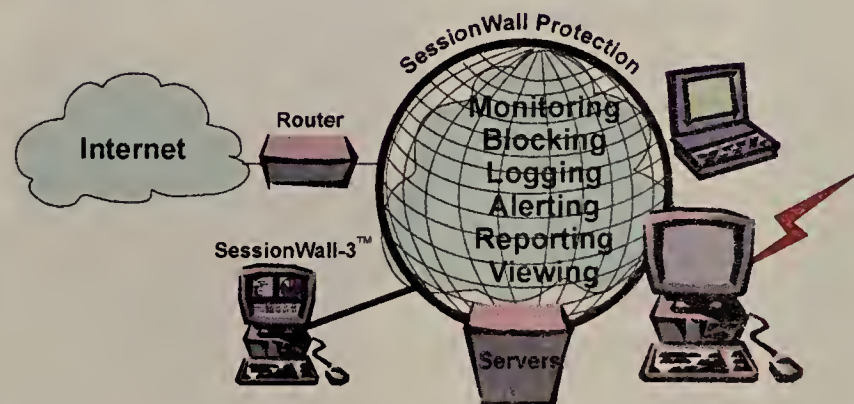
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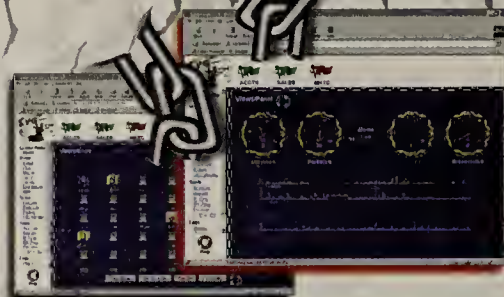
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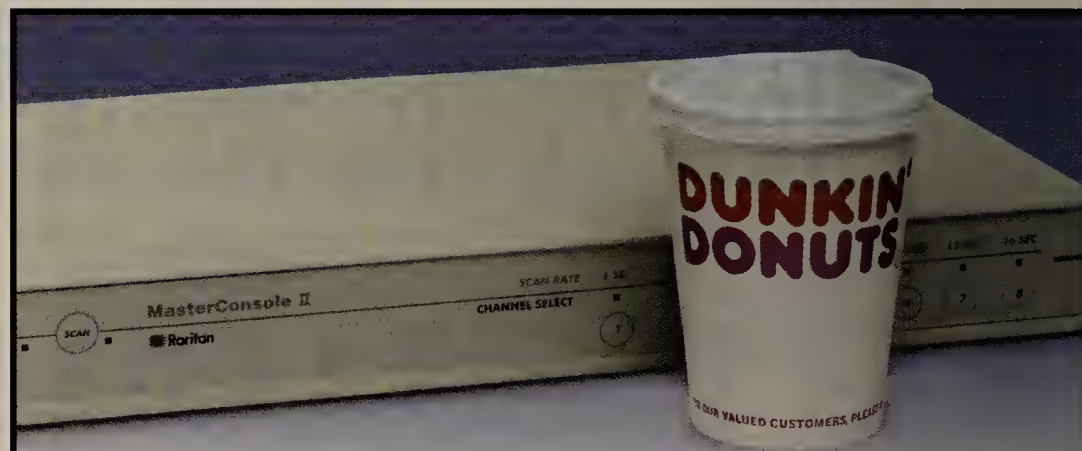
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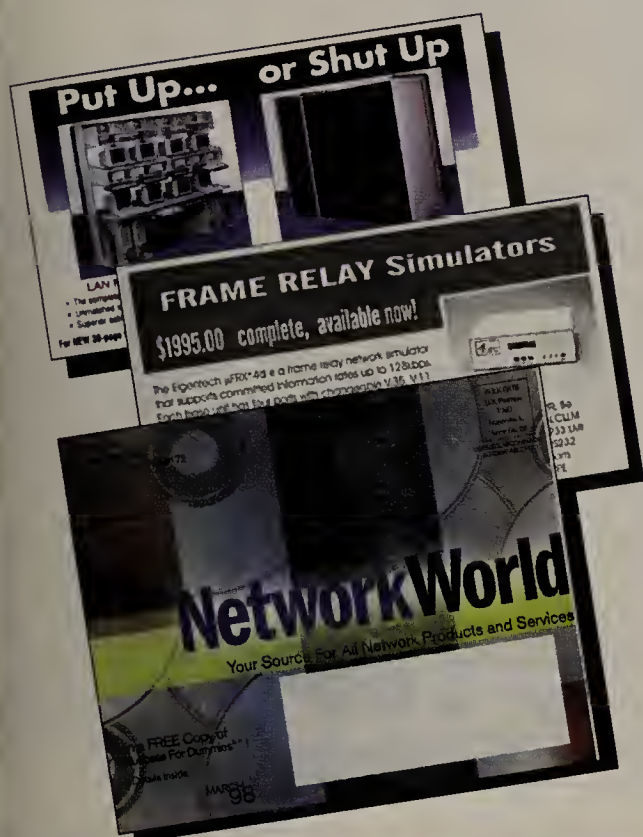
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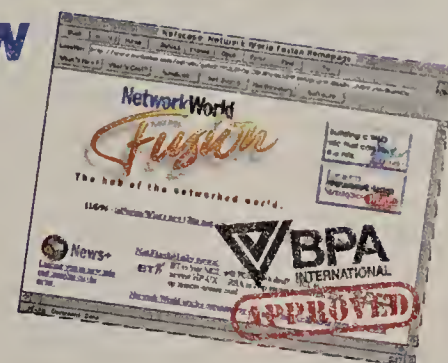
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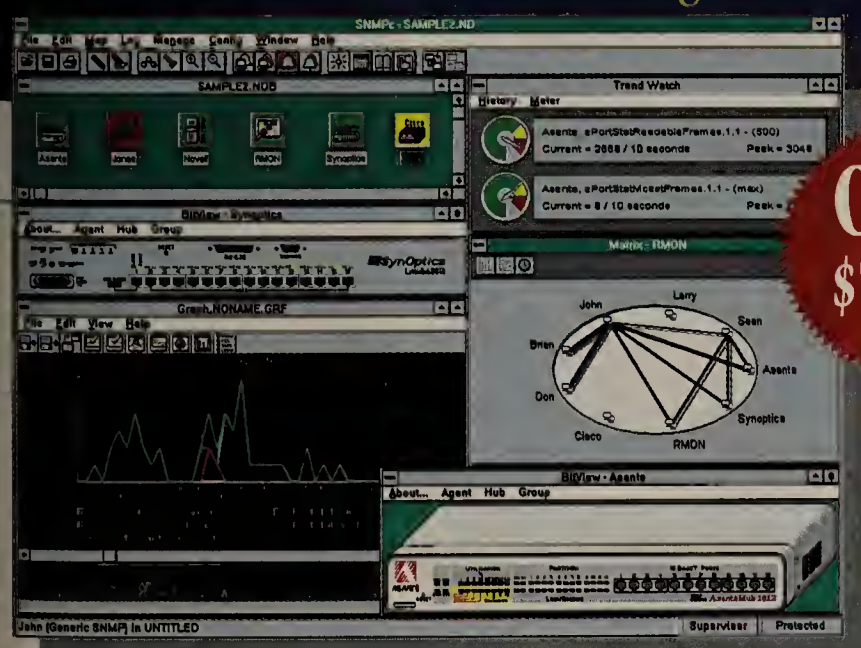
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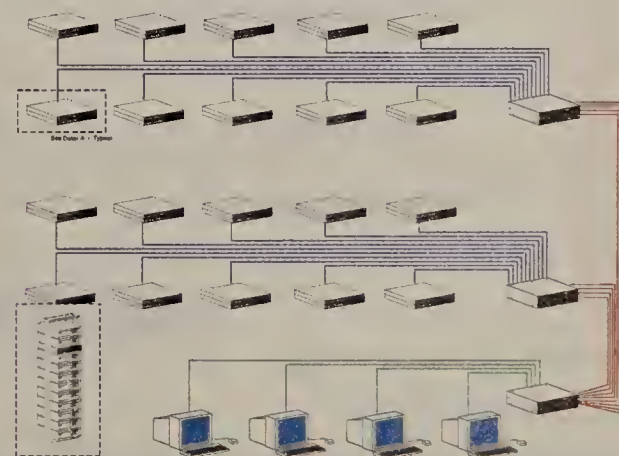
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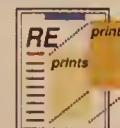
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SET

Continued from page 1

technology in doubt.

Some users and vendors evaluating SET in pilot projects and interoperability tests complained that SET is far too slow in processing card authorizations. They also said that getting different vendors' gear to work together is proving difficult. While it would be premature to declare SET dead, banks, which are in the business of selling Visa- and MasterCard-type services to merchants, say the problems need to be resolved before they're willing to go mainstream with the payment protocol.

"There are a lot of performance issues with SET," said Alan Slater, vice president of advanced development at Citibank.

He said SET, which uses public-key encryption based on RSA Data Security, Inc.'s technology, is "much too slow."

Slater also said the bank is attempting to "speed up SET"

in pilot tests, but until that can happen, Citibank has no plan for mass-market deployment of SET-based card authorizations on behalf of Web merchants.

Getting SET into the real world "is taking a lot longer than we thought it would take," he admitted. SET Version 1 was finalized in May 1997.

Three main network components are required to authorize a SET credit card transaction.

First, a user needs to have a browser-based SET electronic wallet to encrypt a credit card purchase. The electronic wallet lets the online user pay for transactions via credit card, debit card or digital cash.

Second, the merchant needs to be able to receive the SET-encrypted credit card on the merchant Web server in order

to automatically hand it to the bank's SET gateway. And finally, the SET gateway, SET merchant server and SET-enabled wallets all need to interact for the card authorization to proceed.

Inc. and TrinTech, Inc. — are SET-compliant, the good news was overshadowed by larger interoperability worries about SET equipment.

VeriFone acknowledged that the SET interoperability tests it has conducted privately since December with IBM, a key proponent of SET, are not going well.

Although VeriFone's vWallet did win SET certification, "the SET wallet is the simple part," said Tom Wills, senior manager, industry relations in the Internet Commerce Division at Hewlett-Packard Co.'s VeriFone unit. "Far more complex are the SET merchant server and the gateway."

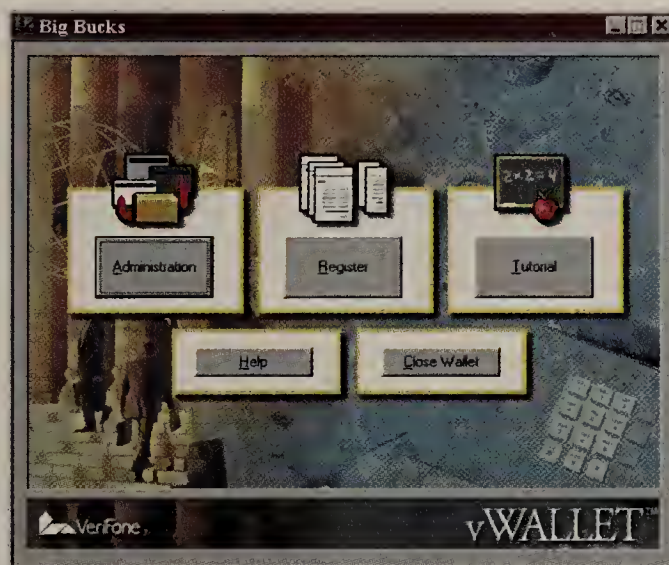
And it's in the server and gateway that things are getting bogged down. IBM and VeriFone are having a hard time getting their gateways and merchant servers to interoperate.

In addition, banks, which will be competing with each other to get Web merchants to begin handling SET transactions, are pushing to put specific business functions into the merchant servers and gateways, Wills said.

Based on what is now known, "we expect we will have to make some changes in our equipment and so will IBM," Wills said. This will mean an upgrade to what the two companies now sell. IBM declined to comment about the testing it is doing with VeriFone.

When it comes to SET performance, special hardware accelerators may remedy the problem of the slowness in the RSA encryption algorithms.

But many involved in SET are already talking about a new version of SET, based on elliptic-curve encryption, that simply uses a mathematical technique that experts — including RSA — generally agree is much faster. ■



VeriFone's vWallet software allows you to encrypt a credit card using the SET protocol.

Although the SETCo testing consortium last week certified that electronic wallets from four vendors — GlobeSet, Inc., VeriFone, Inc., Terisa Systems,

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 **Osicom**



*April 1998 Business Communications Review.

Sprint

Continued from page 1

of a 56K bit/sec Internet connection.

But some analysts had questions about Sprint's announcement when it became clear that none of the prospective ION services are ready and that Sprint would have to obtain access to customer sites via competitors' facilities.

"They've got a hole in the subscriber relationship [area]," said Tom Nolle, president of CIMI Corp., a technology assessment and research firm in Voorhees, N.J. "They haven't articulated a strategy to create, provision and make accessible these applications."

Potential Sprint competitors rushed to heap scorn on ION.

"I think it's dead on arrival," said Guy Cook, vice president of global product management for Qwest Communications International, Inc., an emerging national broadband carrier. "It's enormously expensive and incredibly risky because the entire industry has already recognized that IP is the way to go with regard to integrated access."

Sprint officials said they are not ready to reveal actual ION services and prices, but beta tests will begin during the second half of the year, with commercial rollout in mid-1999. And Sprint was quick to note that IP, as well as other protocols, will be supported over the network's ATM cell structure.

ION is based on an ATM switching core running over a high-speed Synchronous Optical Network (SONET) transport, an infrastructure that Sprint has been installing since 1994. But much depends on devices used at the edge of the network that Sprint is developing with its key ION partners — Bellcore and Cisco Systems, Inc.

At each of seven initial ION Service Nodes, Sprint will employ a Magellan Vector switch from Nortel to provide switching and trunk termination. To provide recognition of the traffic type — be it voice, data or video — Sprint and Bellcore are jointly developing high-end applications known as Service Manager, Security Manager and Feature Manager, according to Marty Kaplan, Sprint's chief technology officer.

Feature Manager in particular will enable Sprint to emulate services provided by traditional "Class 5" circuit switches — the type used by local exchange carriers. As a result, Sprint could, for example, complete ordinary local telephone calls with features such as call waiting.

"The part of this that concerns me is that Bellcore is not an organization that's known for its expedited product development," Nolle said.

To obtain local access to a business customer's site, Sprint will employ what it calls the Broadband Metropolitan Area Network (BMAN). Typically this

See Sprint, page 81

What will it take for Sprint to succeed?



Frank Ianna, executive vice president of network and computing services at AT&T, saluted Sprint Corp. for entering the convergence market but added that AT&T is likewise testing ATM gateway devices at customer sites to concentrate voice and data traffic.

AT&T is purchasing Teleport Communications Group, Inc. and moving to an edge-switch architecture. How do you compare that with Sprint's network announcement?

I think the thing that was missing was that [Sprint] didn't offer any particular solution to the last mile other than they can use a variety of technologies, which is obvious.

The investment in the last mile is the key to breaking the [regional Bell operating company] bottleneck and getting those savings.

Sprint did say one of its approaches would be to purchase unbundled network elements conditioned as digital subscriber lines.

They want to use these unbundled network elements to get into the customer premises and bypass the [RBOC] switching office functionality entirely. That's a good idea, but the key has always been to deploy some of your own facilities and other alternative technologies, such as wireless, to gain some leverage. And it still leaves something to be desired on the business side, where getting penetration into those buildings with the fiber-optic serving rings is really the key.

Are savings on the order of magni-

tude that Sprint talked about possible?

Clearly for on-net traffic you can get the full savings and full benefit of [voice and data] integration into ATM.

But it will take some time to replicate the features of circuit-switched voice services.

Can Sprint pull this off with seven initial Service Nodes scattered around the country?

It depends on how much traffic they have. Seven could be enough, unless they get a tremendous amount of traffic.

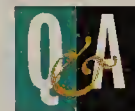
Eventually you're going to have to go out to the edge because a large portion of the cost is at the edge.

— David Rohde



Frank Ianna

"... it will take some time to replicate the features of circuit-switched voice services."



WorldCom, Inc. Chief Operating Officer John Sidgmore still believes that specialized networks offer customers the most robust services and overall features. This isn't surprising, since WorldCom is operating four Internet networks, at least four data networks, a long-distance network that came from several carrier acquisitions and two local telephone networks.



John Sidgmore

"Their enormous spin on ATM will require a significant investment."

Sprint's announcement came with a lot of fanfare and a promise of many things to come. What was your overall impression?

What they announced includes using digital subscriber line (DSL) to bring ATM to the desktop. While we don't dis-

agree with their philosophy, it's not new and not tremendously revolutionary and not even very evolutionary. Their enormous spin on ATM will require a significant investment. We have DSL deployed throughout our original MFS [Communications Company, Inc.] local access [points of presence] today.

What does WorldCom think about ATM at the core of all networking?

We haven't bet the entire ranch on ATM. We have ATM networks, and ATM does offer a pretty robust set of quality-of-service features.

But ATM hasn't been proven as the transmission network for today and tomorrow.

Sprint does not own a competitive local exchange carrier like WorldCom does with MFS and Brooks Fiber. Instead, Sprint plans on setting up relationships with regional Bell operating companies and CLECs to lease their local facilities. Will this strategy work?

If I were in their position that's what I would do. It is enormously expensive to get into the local access business. This strategy requires coordination and cooperation with the RBOCs, and in many cases that's not easy.

We have the option of going directly to our customers through the former MFS local POPs. There is something about going end-to-end from a cost, quality and product flexibility standpoint.

It's a disadvantage that they still are completely dependent on the RBOCs for local access.

— Denise Pappalardo



Phil Hamlin is senior vice president and chief technical officer of Level 3 Communications, Inc. Level 3 is constructing a new nationwide network built from the ground up to handle all voice and data services via packet switching.

Sprint's network will run IP and other protocols over ATM, while yours is native IP all the way. How do you compare the two approaches?

This is not a revolutionary change in their network. This addresses the problem of "How do we comply these new services with the network that we already have?" That's what their engineers came out with. The fact is, customers want IP and that's what all the developers in the industry are writing to.

But Sprint says voice over ATM is more robust than voice over IP. Do you disagree?

Voice over ATM is further developed than voice over IP right now. But that won't be true in six months. There's no inherent technical superiority in either approach.

Sprint says it can reach the customer premises by leasing digital subscriber lines (DSL) from the local carriers instead of building its own network. Is that realistic?

I'm sure that the myriad of other people in the business who are beating their heads against the wall trying to get

xDSL lines from Bells would love to hear that.

If they've got a secret on how to do it, we're waiting with bated breath to hear what it is.

Sprint officials kept comparing themselves to new carriers, such as Level 3, saying they were in a better position to provide convergence services. Were you surprised?

They certainly lobbed a couple of bombs at us.

I guess I was flattered. I didn't think that they paid that much attention to us.

— David Rohde

Phil Hamlin

"Voice over ATM is further developed than voice over IP right now. But that won't be true in six months."

Sprint

Continued from page 80

will consist of OC-3 or OC-12 high-speed rings circling an urban area and OC-3 collector circuits traversing major concentrations of commercial sites.

However, in a major departure from the strategy of all its principal competitors, which either own or are buying competitive local exchange carriers (CLEC), Sprint will not actually build or own the BMAN circuits. Instead, Sprint will lease them from regional Bell operating companies or CLECs.

To provide ION service to smaller businesses and residential users, Sprint will purchase the local loop to the customer site as a so-called unbundled network element from RBOCs or CLECs. Kevin Brauer, Sprint's president of national integrated services, indicated that Sprint may then put DSL electronics on the line themselves or buy an actual DSL loop. Sprint officials emphasized, however, that the company could support a "myriad" of dial-up access methods.

Users were adopting a wait-and-see attitude on these access options. "I don't understand it if they're going to try to do it on copper," said Dawn Sutherland, network administrator for Regency Realty Corp. in Atlanta. If Sprint does succeed in obtaining a fiber route into her building, "I would be very interested in this, but only if Sprint takes full responsibility for whoever they're leasing, begging or borrowing the fiber from."

To run the ION services, Sprint will have to install a business hub at the customer premise. These ATM access devices will be dedicated to one user or shared by multiple tenants in an office building. The initial users of

ION service are expected to use Magellan Passport ATM switches from Nortel.

But by year-end, Sprint officials said they will switch their preferred supplier of the business hub to Cisco, which recently announced several IP-capable ATM service nodes. The expectation is that Sprint users will be able to plug in their PBXs, fax servers, LAN hubs and

other network gear to the Cisco box to run multimedia traffic over a single high-speed access link.

Sprint marketing officials said they have not yet decided whether to charge users separately for the business hub or to build it into the monthly charges for the ION products. The question about the equipment cost was another con-

cern for users.

"I'm in a huge 23-story building," Sutherland said. "What if I'm the only one out of hundreds of tenants who's interested [in ION]? Do I have to pay for the whole thing?" ■

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April 28 Irvine, CA
April 29 San Francisco, CA
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Reverend Gibbs on sins and absolution

When your purpose in life is to entertain the gods, there's nothing to do but to put on a good show.

— Anon

Speaking as a man of the cloth (I was ordained last week), I suspect the gods are currently having a high old time over what we mortals are up to.

<digression> I really was ordained.

The Universal Life Church (www.ulc.org) will ordain

one and all on its Web site

(let me know if you get

ordained). My ordination

now allows me to perform

weddings and grant absolution.

If you would like to know

more about the Gibbs In-

stitute's Religious

Services Division, please drop a

line to weddings@gibbs.com. If you

crave absolution, use absolution@

gibbs.com, but don't send me details

of your misdeeds, there's a serious

legal issue concerning clergyman/

penitent privilege. </digression>

Speaking of faith, I don't know

about you, but I never had much faith

in the idea that network computers

(NC) would take over the world. It

just seemed much too optimistic to

think that untried devices that cost

more than half the price of a PC but

offer less than half the functionality

could displace PCs.

Now we see the curious spectacle

of those sinners Messrs. Ellison and

McNealy rapidly redefining their

boosterism of NCs in the face of

harsh reality (NW, June 1, page 8). I

say curious because they are doing so

without ever admitting that they were

wrong. The sin in play here is the sin

of obfuscation.

If you should happen to be read-

ing this Mr. Ellison or Mr. McNealy,

drop a note to my absolution address

— you both need redemption.

And there's more sin on the

horizon. AT&T, the Sodom and

Gomorrah of telecommunications,

has just announced it is going to levy

a 5% surcharge on each bill to cover

universal service costs. The Federal

Communications Commission is

none too happy about this (see

Network World Fusion, www.nwfu-

sion.com/news/0528att.html).

AT&T revealed the charge in a tar-

iff filing, hoping perhaps no one

would notice. What triggered the sur-

charge apparently is the federal gov-

ernment's wretched E-rate program,

voted for by the FCC in May 1997. E-

rate levies charges on long-distance

carriers. The charges are used to give

20% to 90% discounts to schools

ordering Internet access and

other telecom services.

E-rate is an ill-considered

program and needs to be redefined

if it is to work. The fact that

AT&T can use it as leverage for in-

creased charges shows that no one

really thought through the implications.

At any rate, this move by

AT&T looks like our old friend,

avarice. I just wonder if the other tel-

cos are going to follow suit for the

obvious pecuniary reasons, or will they

be smart enough to use AT&T's idiocy

as marketing leverage. If AT&T puts

this charge into practice I, for one, am

going to make sure that I never use its

services (how about you?).

Also on the faith front, here's an

example of wild optimism by Van

Clair Co. of San Carlos, Calif., which

owns the domain "computer.com."

The company seems to have no use

for the name and is looking for buy-

ers to open the bidding at \$250,000!

Now considering that C|Net owns

"computers.com," I'd say the name

has limited value. The sin here is

easy: Avarice again.

My final spotting of a sin is the sin

of stupidity. Apparently InterNIC fil-

ters all domain name requests for the

seven dirty words that are banned

from network television. It was no

surprise then that IDG.net reported

that one Jeff Gold tried to register

the name "shitakemushrooms.com"

and was denied. InterNIC says it will

allow the name if he asks again. Of

course, had he spelled the mush-

room's name correctly (shiitake), he

would have been too late — some

guy with a dictionary was first.

Divine thoughts to nwcolumn@gibbs.com

or (800) 622-1108, Ext. 7504.



Mark Gibbs



'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

NEXT STOP, THE FEDERAL BUDGET In a no-nonsense assault on government excess, House Majority Leader Dick Armey has pitilessly hacked down the size of his Web site addresses.

An official statement from the Texas Republican's House office says the bold move was made "in the spirit of making government smaller, smarter and more efficient."

The two Web sites, "freedom.house.gov" and "flattax.house.gov," will be replaced by "freedom.gov" and "flattax.gov."

Armey reportedly fired the staffer who created those original bloated URLs, unmasking him as a big-domain-name liberal who had infiltrated his office.

SILKNET SCORES \$16 MILLION VENTURE ROUND A start-up that makes Web-based customer self-help software is helping itself to \$16 million in venture funding.

Silknet Software, Inc. has closed a third-round

venture deal with CMG@Ventures, Intel Corp.

and JAFCO America Ventures, a Japanese venture

capital firm.

Based in Manchester, N.H., Silknet's flagship

product is eService, a software package that uses a

search engine and Internet multimedia tools to

enable customers with questions or problems to help themselves on a

company's Web site without the aid of support staff.

Other investors in Silknet include BancBoston Ventures, Vertex

Management and Zero Stage Capital.

NO WONDER JAVA INSPIRES SUCH LOYALTY A faithful 'Net Buzz reader recently told us about an interesting experience he had while trying to find answers to a Java-related question.

It seems that Sun has a call center for Java products that can be reached at (888) THE-JAVA. Eagerly, our friend picked up the phone and dialed.

In his haste, however, he dialed (800) THE-JAVA and, much to his surprise, found himself connected to a different kind of call center. (Hint: Callers are greeted with a breathless, "Hi honey.")

While giving the service high marks for friendliness, our source says he never got an answer to his Java questions, despite calling more than a dozen times.

BRICKLIN'S QUEST DOCUMENTED ONLINE Amid the honky-tonk ambience of the World Wide Web, Dan Bricklin has constructed a temple of efficiency and order.

Last year the co-inventor of the spreadsheet launched a start-up, Trellox, Inc., to make software allowing users to create electronic business documents that look and act like Web pages, without the drawbacks of Web-style presentation. (Long, scrolly text and labyrinthine, multilayer hyperlinks, for example.)

Now he has built a Web site that shows visitors how to write and present business documents on their corporate intranets.

You'll find no twirling Java logos or flashing toolbars at www.gooddocuments.com. Only tips and discussion on creating intranet documents — company policies and procedures, market analysis, project status, presentations, etc. — that enable readers to find what they need quickly.

(Wired magazine editors, take note.)

Even Bricklin admits the site isn't flashy, but that's not his goal.

"It is not a guide for making cool Web sites that attract readers," he

writes. "It is a guide for populating an intranet with documents that help

a business be more effective."

Hey, did you expect frivolity from a guy who got famous by creating

software designed to help accountants?

While 'Net Buzz may lack Bricklin's dazzle and Sun's sensuous ways, we remain

devoted to offering you the best Internet- and intranet-related news, rumors and

innuendo around. Get in on the fun by contacting Chris Nerney at (508) 820-7451

or cnerney@nwv.com. As soon as you finish calling that Java help desk. Again.



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